

The
President's Review
from

THE ROCKEFELLER FOUNDATION
ANNUAL REPORT

1956



The
President's Review

from

THE ROCKEFELLER FOUNDATION
ANNUAL REPORT

1956



49 West 49th Street, New York

PRINTED IN THE UNITED STATES OF AMERICA

CONTENTS

Trustees and Officers, 1956	v
The President's Review	
Introduction	3
An Expanding Program Overseas	4
The Nuclear Age	8
Hungarian Refugees	16
Medical Education and Public Health	18
Biological and Medical Research	22
Agriculture	30
Man in Free Societies	40
Intercultural Understanding	53
The Arts	56
Projects and People	63
Other Matters of Foundation Interest	64
"Out of Program" Projects	64
Organizational Information	66
Summary of Appropriations Account and Principal Fund	71
Appropriations Made in 1956	72
Illustrations	<i>following</i> 88

THE ROCKEFELLER FOUNDATION

Trustees and Officers, 1956

The Rockefeller Foundation

TRUSTEES AND OFFICERS, 1956

TRUSTEES

CHESTER BOWLES	JOHN J. MCCLOY
DETLEV W. BRONK	HENRY ALLEN MOE
RALPH J. BUNCHE	WILLIAM I. MYERS
WILLIAM H. CLAFLIN	THOMAS PARRAN
JOHN S. DICKEY	JOHN D. ROCKEFELLER, 3RD
LEWIS W. DOUGLAS	DEAN RUSK
LEE A. DUBRIDGE	ROBERT G. SPROUL ¹
WALLACE K. HARRISON	ARTHUR HAYS SULZBERGER
JOHN R. KIMBERLY	HENRY P. VAN DUSEN
ROBERT F. LOEB	W. BARRY WOOD, JR.
ROBERT A. LOVETT	

OFFICERS

JOHN D. ROCKEFELLER, 3RD	<i>Chairman of the Board of Trustees</i>
DEAN RUSK	<i>President</i>
ALAN GREGG ¹	<i>Vice-President</i>
LINDSLEY F. KIMBALL	<i>Executive Vice-President</i>
WARREN WEAVER	<i>Vice-President for the Natural and Medical Sciences</i>
FLORA M. RHIND	<i>Secretary</i>
JANET M. PAINE	<i>Assistant Secretary</i>
EDWARD ROBINSON	<i>Treasurer</i>
ROBERT LETORT	<i>Assistant Treasurer</i>
H. MALCOLM GILLETTE	<i>Comptroller</i>
GEORGE E. VAN DYKE ²	<i>Assistant Comptroller</i>
ROWE S. STEEL ³	<i>Assistant Comptroller</i>

¹ Retired June 30, 1956.

² To September 30, 1956; on special assignment to Turkey.

³ Beginning October 1, 1956.

MEDICAL EDUCATION AND PUBLIC HEALTH

JOHN C. BUGHER, M.D.	<i>Director</i>
MARSHALL C. BALFOUR, M.D.	<i>Associate Director</i>
JOHN B. GRANT, ¹ M.D.	<i>Associate Director</i>
WADE W. OLIVER, ² M.D.	<i>Associate Director</i>
ROBERT B. WATSON, M.D.	<i>Associate Director</i>
JOHN M. WEIR, M.D., PH.D.	<i>Associate Director</i>
VIRGINIA ARNOLD, ³ R.N.	<i>Assistant Director</i>
ROLLA B. HILL, ⁴ M.D.	<i>Assistant Director</i>
OSLER L. PETERSON, ⁵ M.D.	<i>Assistant Director</i>

BIOLOGICAL AND MEDICAL RESEARCH

ROBERT S. MORISON, M.D.	<i>Director</i>
HARRY M. MILLER, JR., PH.D.	<i>Associate Director</i>
GERARD R. POMERAT, PH.D.	<i>Associate Director</i>
RICHMOND K. ANDERSON, M.D., PH.D.	<i>Assistant Director</i>
JOHN MAIER, M.D.	<i>Assistant Director</i>

AGRICULTURE

J. GEORGE HARRAR, PH.D.	<i>Director</i>
ALBERT H. MOSEMAN, ⁵ PH.D.	<i>Associate Director</i>
ROBERT P. BURDEN, D.SC.	<i>Assistant Director</i>
ROBERT F. CHANDLER, JR., PH.D.	<i>Assistant Director</i>
JOHN J. MCKELVEY, JR., PH.D.	<i>Assistant Director</i>
KENNETH WERNIMONT, M.A., LL.B.	<i>Assistant Director</i>
RICHARD BRADFIELD, ⁶ PH.D.	<i>Regional Director in the Far East</i>

¹ Retired June 30, 1956; on special assignment to Puerto Rico.

² Retired June 30, 1956.

³ Beginning September 1, 1956.

⁴ Retired July 31, 1956.

⁵ Beginning July 1, 1956.

⁶ Until July 31, 1956.

THE SOCIAL SCIENCES

NORMAN S. BUCHANAN, PH.D.	<i>Director</i>
LELAND C. DEVINNEY, PH.D.	<i>Associate Director</i>
ROGER F. EVANS	<i>Assistant Director</i>
KENNETH W. THOMPSON, PH.D.	<i>Assistant Director</i>
MONTAGUE YUDELMAN, ¹ PH.D.	<i>Assistant Director</i>

THE HUMANITIES

CHARLES B. FAHS, PH.D.	<i>Director</i>
EDWARD F. D'ARMS, PH.D.	<i>Associate Director</i>
JOHN MARSHALL	<i>Associate Director</i>
CHADBOURNE GILPATRIC ²	<i>Associate Director</i>
JOHN P. HARRISON, ³ PH.D.	<i>Assistant Director</i>
ROBERT W. JULY, PH.D.	<i>Assistant Director</i>

BOARD OF CONSULTANTS FOR AGRICULTURE

JOHN NORMAN EFFERSON	HERMAN ALONZO RODENHISER
P. C. MANGELSDORF	ERNEST C. YOUNG
WILL MARTIN MYERS	

¹ Beginning April 1, 1956.

² Assistant Director to April 4, 1956.

³ Beginning November 1, 1956.

The
President's Review
1956

Introduction

During 1956 The Rockefeller Foundation appropriated \$30,075,305, the largest total in any single year since the Foundation was established in 1913. With an income of \$22,369,496 for the year, these appropriations reflect a decision by the Trustees to utilize a portion of the Foundation's capital funds in support of an expanded program in Latin America, Asia, the Middle East, and Africa, as will be discussed in the next section. A distribution of disbursements among major fields of interest is as follows:

Medical Education and Public Health . . .	\$ 4,290,605
Biological and Medical Research	5,501,100
Agriculture	4,877,400
Social Sciences	3,290,260
Humanities	5,963,605
Unclassified grants	2,184,000
Administration	3,968,335
	<hr/>
	\$30,075,305

Foundation fellowships were held in 1956 by 458 individuals from 47 countries; appropriations included \$2,025,000 for the fellowship program.

The item for administration covers considerably more than the usual "overhead" costs. The Rockefeller Foundation continues to expend the greater portion of its funds through grants to other institutions; it does, however, undertake certain tasks in medicine and agriculture through members of its own staff. Support for these direct operations, for officers and staff on loan to other institutions or to governments, and for other forms of public service is included, for convenience, under administration.

The uncommitted capital funds of The Rockefeller Foundation at market value on December 31, 1956, amounted to \$608,287,630.71. As of the same date, the outstanding commitments of the Foundation totaled \$42,354,705.04.

Appropriations in 1956 bring the total of all appropriations since 1913 to \$565,456,661.65.

An Expanding Program Overseas

Of the present 81 Members of the United Nations no less than 19, with a total population of more than 650,000,000, have emerged as fully independent nations since World War II. All 19 are to be found in Africa, the Middle East, and Asia, areas from which still other independent nations will be knocking on the door of the world community within the next decade. In long perspective, this means that the ideas of national revolution and self-determination, born in the West and spread from there into other regions along with trade and empire, have borne their fruit and that the non-Western world is rapidly becoming responsible for its own affairs under its own leadership.

The implications of these events are far-reaching. The fact of independence itself is not new; the history of the past two centuries is filled with the successful efforts of more than 30 other Members of the United Nations to break away from some form of political dependence. What is of greater significance is that more of the peoples of the world, with all the variety of their historical and cultural traditions, are now represented directly at the tables of world diplomacy to assert their claims, present their points of view, submit their disputes, and participate in the handling of world affairs. The diplomatic center of gravity, which rested for so long with Europe and the Western Hemisphere, is shifting and perhaps disappearing as a meaningful concept.

Increases in the numbers of states alone suggest the need for revised techniques both in bilateral and multilateral diplomacy. New relationships are evolving between the West and the non-West, between white and non-white. The less tangible elements of power and the imponderable sanctions of opinion and prestige, no less important than weapons and material goods, are distributed more widely; the cumulative weight of the so-called lesser powers is steadily growing. There are more sovereign frontiers across which disputes may occur, more factors to be taken into account in adjusting differences, more problems of explaining and understanding.

The outsider naturally thinks first of the international roles of these newly independent nations, but the peoples themselves are largely preoccupied with domestic affairs and their everyday needs—as are the rest of us. Each of these nations is unique and generalizations about their circumstances, aspirations, and prospects are extremely hazardous. Nevertheless there appear to be certain features which are sufficiently common to make a few observations barely possible.

Many of these nations are now attempting to build, some from the ground up, an administrative structure to take the place of one which has been swept away; some are still preoccupied with the rudiments of law and order. They are moving tentatively and experimentally toward the constitutional and political arrangements under which their affairs are to be managed for the longer run. The unity which marked the struggle for independence is proving more difficult to maintain for the laborious and less glamorous tasks of building new nations. Relatively few have a complex of established institutions to carry much of the daily load through habit or automatic action, leaving for the highest levels of leadership the burden of decisions on relatively minor matters.

Their peoples are stirring with new hopes and expectations of economic and social improvement, the promised reward of independence; governments find themselves under great public pressure to make good on this promise and are under a terrible compulsion to do quickly what others have been able to do only slowly over a long period of time. In some, population growth outruns capital investment and increasing production, spreading gloom on the horizon ahead. There is an acute shortage of capital both for economic investment and for the essential public equipment of a going state, but subsistence levels offer little prospect for rapid accumulations of capital from internal resources. Productivity is low, if slowly rising. Illiteracy rates are high; education is in short supply, and at all levels in almost every field of endeavor there is a severe shortage of trained personnel.

If there are menacing problems, there are also encouraging assets. Some of these nations are fortunate in leadership with long vision and a realistic perception of the nature of the task at hand. Many are determined to work out their future under the freedoms of a constitutional system, adapted for their own situation. Some have a promising framework of educational institutions as a base for further expansion. Rising expectations produce new energy, both in the villages and in urban centers. Pride in independence undergirds public morale and calls many to selfless and devoted service. Some have important natural resources waiting for further development, a few even have surpluses over current consumption available for investment. Sensitivity still leaves room for an anxiety to learn on the part of peoples who are easy to teach. Disinterested assistance from abroad is welcomed and modest investments of time and money yield high dividends in human welfare.

The officers and Trustees of The Rockefeller Foundation are deeply impressed with the thought that the prospects for peace and orderly economic growth throughout

the world during the next quarter-century can be decisively affected by what happens in the independent nations of Africa, the Middle East, and Asia. If they succeed in establishing constitutional systems with friendly and easy exchange with the rest of the world, increasingly productive economies to supply their own needs at rising levels and to play an active role in world trade, and educational systems which can train their leadership in adequate numbers and educate their citizenry for the responsibilities of their new societies, then peace and stability will have gained tremendous support. Conversely, their failure to achieve a steady advance toward their present aspirations will create threats to the peace and postpone indefinitely the possibility of stability in the world at large.

The Foundation, in considering what it might do to be of assistance to the independent nations of the non-Western world, thought also of its traditional interest in Latin America, where many of the same problems exist if under somewhat different conditions. The Trustees decided that the needs and opportunities were sufficiently compelling to warrant a sharp increase in Foundation expenditures in Latin America, Asia, the Middle East, and Africa. In order that this might be done without a large reduction of expenditures in the United States and Europe, it was decided to use a portion of the Foundation's capital funds for a period of several years. During 1956, for example, some \$6,000,000 was allocated to the expanded program, over and above the normal allotments for these areas (approximately \$5,700,000) from annual income.

The amounts involved are small, certainly, in relation to total need; but it is believed that such funds can be of great significance if applied at the point where the Foundation believes that it can make the best contribution, namely, in the training of professional leadership. There is no single pattern by which this aid is to be offered. Support is being

provided to key institutions in key countries to assist in more advanced training within the local scene. Scholarships and other forms of study grants are being provided in considerable number, without rigorous adherence to the formal requirements of the traditional Rockefeller Foundation fellowships. Grants in aid provide essential books, miscellaneous items of equipment, and other aids to professional advancement. In some instances, the Foundation's own staff is used to give direct assistance to the organization of advanced training centers. A few grants have been made to institutions in the United States and Europe in direct support of activities which they have undertaken in service to one or more countries abroad. The Foundation's approach must necessarily be selective and cannot be evenly distributed throughout the vast areas involved. Its efforts will move more rapidly in some than in others, partly because local circumstances will permit it, partly because the Foundation itself needs time to become acquainted with countries in which it has not had long experience. The Foundation has not set up a separate organizational unit to handle this expansion of program; each of the Directors has a part in it and grants are reported in the Annual Report under the five major categories for which the Directors are responsible.

The Nuclear Age

In the Annual Report for 1940, Raymond B. Fosdick, then President of The Rockefeller Foundation, described a grant of \$1,150,000 toward the construction of a 184-inch cyclotron at the University of California at Berkeley with these words: "It is an adventure in pure discovery, motivated by the unconquerable exploring urge within the mind of man. . . . It is a mighty symbol, a token of man's hunger for knowledge, an emblem of the undiscourageable search

for truth which is the noblest expression of the human spirit."

In the autumn of 1945, shortly after the first use of fission bombs in warfare, Mr. Fosdick sent to the Trustees a review of the scientific developments preceding the appearance of these awesome weapons, with the following introductory comment:

. . . . Whether the release of atomic energy in the long run will result in good or evil for the race, no one can now say; but whatever the consequences, the Foundation and its related boards cannot escape their share of the responsibility, indirect as it may be. The atomic bomb is the result of influences which, for the most part unintentionally and unwittingly, we helped to set in motion, because we were interested in pushing out the boundaries of knowledge. It is a tragic irony that when men have been most successful in the pursuit of truth, they have most endangered the possibility of human life on this planet.

The towering question which faces the world now is whether the new energies can be controlled. It is, I know, the hope of all of us that the Foundation may be able to make some contribution, however slight, to this end.

Thus, within five years, the exhilaration of discovery was dampened, at the Foundation as everywhere else, by the sobering impact of an enormous new power which man had wrested from nature—for good or for evil, or for both, depending upon how he will use it. Mr. Fosdick's words, "unintentionally and unwittingly," in the comment quoted above, are a reminder that the possibilities of nuclear weapons or of the controlled release of nuclear energy on other than an infinitesimal scale appeared at a late stage of nuclear research. There was a 34-year gap between Albert Einstein's announcement that $E=mc^2$ and his famous letter to President Roosevelt in 1939 about the possibility of atomic weapons. Lord Rutherford discovered the atomic nucleus more than forty years ago; if there were chain reactions from the work of these two men, they were to be found for

decades in the waves of interest and excitement which stimulated the physicist, the chemist, the biologist, and the medical researcher to undertake experiments of increasing subtlety and intellectual power to push back the frontiers of knowledge. Undoubtedly, the primary motive of these earlier devoted investigators was nothing more, and nothing less, than additional satisfactions for man's insatiable curiosity, a motive for which The Rockefeller Foundation has always held the greatest respect. More practical possibilities, of course, opened up. Isotopes came to serve as tags for the study of biological processes, some of great medical significance, which had earlier defied understanding. The supply of radioactive materials for research and therapy could be multiplied by the bombardment of common materials and free man from the limitations of his scant supplies of radium. Perhaps at long last something effective could be done about cancer and other baffling diseases.

The scientific trail from $E=mc^2$ to nuclear weapons and the peaceful uses of nuclear energy has been described elsewhere. More than a decade has passed since mushroom clouds publicly announced the availability of a new source of enormous power. If initial shock and dismay led some to question whether man should intrude upon secrets better left locked away in nature, it should now be apparent to all that the nuclear age is here to stay. Moral philosophy may be able to pose some interesting questions about unlimited freedom of scientific inquiry but the debate is conditioned by the absence of practicable alternatives. Nature continues to entice the curious, and human need requires the further harnessing of its resources and protection from its attacks. The history of scientific exploration is filled with surprise and accident, as tortuous paths lead to unplanned and unpredicted results. There is nothing new about the fact that when man increases his power to act, he achieves greater capacity for both good and evil. The science of healing opens the

door to biological warfare; rapid mass communications transmit friendship or hostility; ships and planes may carry peaceful trade or troops bent upon destruction. But attempts to bar certain sectors of knowledge as off limits would be futile and place a high premium upon clandestine research. Men will not turn to the genocide of the curious or deliberately embrace a new barbarism. The answer to dangerous knowledge continues to be more knowledge, broadly shared by an international community of science and scholarship, and reliance upon the determination of man to grow in wisdom and understanding.

The Rockefeller Foundation had, as Mr. Fosdick implied, taken a lively interest in nuclear research, especially after its activities in support of the natural sciences increased sharply in the early 1930's. Even earlier, its funds had provided fellowship assistance to many whose prepared minds were to play a significant role. Among those, for example, who had held fellowships from the Foundation, or from the International Education Board, or from the National Research Council out of Foundation funds, were such scientists as Robert F. Bacher (1930-32), Hans Bethe (1930-32), Arthur Compton (1919-20), Edward U. Condon (1926-27), Enrico Fermi (1924), Ernest O. Lawrence (1925-27), J. R. Oppenheimer (1927-28), Henry DeW. Smyth (1921-24), Edward Teller (1933-34), and John A. Wheeler (1933-35).

In addition to opportunities for further study by individuals, Foundation funds assisted a number of laboratories with buildings, such items of equipment as electrostatic generators, cyclotrons, and betatrons, and free research funds for nuclear investigations. One notable group of laboratories was at the University of Copenhagen, where the physicist Niels Bohr, the chemist George von Hevesy, and the physiologist August Krogh led a distinguished company of scientists in pooling the resources of their several disciplines

to work at such questions as the biological uses of isotopes. Another was the Radiation Laboratory of the University of California at Berkeley, where Ernest O. Lawrence devised and rapidly developed the cyclotron. The list would include the Collège de France, the University of Minnesota, Rochester, Stockholm, Washington University at St. Louis, the Massachusetts Institute of Technology, Columbia, Chicago, Princeton, the University of São Paulo. Two of the last grants made by the Foundation before the field of nuclear research was swept up into the wartime Manhattan Project provided \$60,000 in 1942 to expedite the winding of the armature of the giant magnet of Lawrence's new 184-inch cyclotron, and a sum of \$100,000 at about the same time to the Metallurgical Laboratory of the University of Chicago for research in problems of industrial hygiene arising from the handling of radioactive materials.

The first decade of the nuclear age has been a period of rapid scientific and technical development. The prediction of the Smyth Report (1945) that nature would not play political favorites in revealing its secrets to competent investigators has come to pass. Nuclear weapons are in the hands of rival governments; fundamental knowledge is now largely unclassified and available to all who can understand it; men are addressing themselves seriously to the "towering question," to borrow Mr. Fosdick's phrase, of how best to multiply the benefits of nuclear power and to minimize or remove its technical and political dangers. The nature of the questions ahead has been considerably clarified, even though the answers are by no means clear. The Rockefeller Foundation, both because of its charter purpose and because of its long interest in nuclear matters, continues to give thought to the contribution which it might make. For the present, there seem to be three main directions in which the resources of the Foundation might usefully be applied, taking into account the very large sums available from government and industry.

The first important area of Foundation concern with the nuclear age might be called the public health of nuclear energy, broadly conceived. Man is now capable of adding significantly and dangerously by his own actions to the inescapable natural radiation already present in his environment. He can do this by nuclear war, by a sustained and large-scale testing of nuclear weapons, by the pollution of food, air, and water through inadequate disposal of wastes. Increasing numbers of individuals can be subjected to additional hazards by radioactive therapy, by industrial accidents, or by the handling of the increasing quantities of radioactive materials without proper protection.

It is known that radiation can inflict damage upon human beings, both genetic and pathological, and that sufficient dosage can cause death. At the very threshold of the nuclear age, therefore, important questions are posed, for all of which reliable answers are not yet available. Some of these questions involve matters of art and judgment for which further research cannot itself provide a definitive answer; for example, what level of genetic risk must be accepted in order to maintain a weapons system designed to deter the launching of a nuclear war by an aggressor nation, possibly involving tens or hundreds of millions of lives? Under what circumstances should a patient be advised to accept a substantial risk of radiation damage in order to obtain the benefits of radioactive therapy? Nevertheless, there are gaps in knowledge which might be filled by further investigation which have a bearing, at least, upon public policy decisions of the utmost importance, ranging from decisions as to the character of military establishments to the measures which will be needed to protect populations and individuals from harm as the peaceful uses of nuclear energy become commonplace.

In December, 1954, the Trustees of The Rockefeller Foundation discussed at some length the effects of radiation upon man, taking into account the fact that more and more

information was becoming declassified and accessible for independent research and public discussion. They decided to invite the National Academy of Sciences to consider whether it, as the most distinguished and representative group of scientists in America, would be willing to make an independent study which would, first, draw together what is now known about the effects of radiation on man and second, help to identify those questions upon which further research is urgently needed. The National Academy would have complete freedom in selecting those to participate in the study, the questions to be considered, and, of course, in determining the contents of such reports as might ensue. Happily, the National Academy accepted the invitation and was promptly assured of the full cooperation of the U.S. Atomic Energy Commission.

In the months which followed, the National Academy of Sciences constituted six committees, each consisting of eminent scientists possessing both specialized knowledge and broad experience, to carry on continuing studies of the biological effects of atomic radiations from the points of view of genetics, pathology, meteorology, oceanography and fisheries, agriculture and food supplies, and the disposal and dispersal of radioactive wastes. Their initial reports, published in June, 1956, were given wide circulation and provided a highly useful and authoritative background for increasing public interest in the issues involved. From the point of view of those interested in research and support for research, the reports are introductory to the further investigation of questions needing urgent clarification.

The Foundation's grants to the National Academy of Sciences for the above purposes amount thus far to \$275,000.

A second aspect of Foundation interest continues, in effect, its traditional role in support of basic scientific research, with main emphasis upon the living processes. Tools

of great power and precision, using radiation techniques, can now be used for the further study of the structure and functioning of both plant and animal life. In the wake of advancing knowledge at the most fundamental level come highly useful applications in such fields as medicine and agriculture. It is to be expected that established Foundation programs in these fields will involve support for research which fully utilizes the newer radioactive tools, and that more attention will be given to plant, animal, and human genetics. A more detailed account of the Foundation's research interests in the life sciences will be found below, and in the Annual Report, under the headings "Biological and Medical Research" and "Agriculture."

A third type of study to which Foundation support is planned, on a selective basis, would delve into the economic, legal, and political problems of the nuclear age, with special attention to the increasingly complex issues of international relations with which nuclear energy is now inextricably bound. There seems little doubt that the most immediate danger from the unprecedented increments of power now at hand lies in the possibility of large-scale nuclear warfare. Similarly, the most revolutionary—and most hopeful—early impact of nuclear energy might well be the forced revision of traditional views about the role of force in international relations and the age-old partnership between policy and military power. Political scientists have often noted the presence of an external threat as a powerful motivation toward unity and toward the solution of differences among those exposed to a common threat; intriguing is the prospect, however fanciful at the moment, that the tiny atom may provide the political equivalent of the "threat from outer space" which idle speculation has sometimes posited as a precondition for peace among the major powers.

The path which leads to the craggy heights of peace, and which the principal nations would have to take together,

is not yet discernible and one suspects that it is to be sought in terrain filled with tension and danger. Force remains with us because peace, although elevated several ranks by nuclear weapons, is not the *summum bonum* in a world in which a consensus about justice is not complete. There would be grave risks in relying upon the hope that the violence of force can be limited among the passions of war, or upon the expectation that a belligerent would yield before using all its means to crush its enemy. It may be necessary and instructive for the principal nations to work intensively upon possible arrangements for limiting or reducing armaments, but for the longer run the prospects for peace will turn upon the political, economic, and social issues which create the temptation to use them. Here the Foundation's commitment to "root causes" comes into play, along with a certain humility engendered by problems so vast, so obscure, and seemingly so unyielding to rational processes. The Foundation's approach is to provide support for those who seem to be capable of biting into the complexities of major long-term international questions against the sobering background of nuclear power. Examples of such grants are to be found below under "International Relations" (p. 47).

Hungarian Refugees

The distressing events in Hungary in October and November of 1956 drew the Foundation's attention once more to a need which unhappily has arisen on more than one occasion since 1913 — the plight of scientists, scholars, and students who find themselves overwhelmed by political events and forced to seek refuge in another country. The Rockefeller Foundation does not contribute to what is commonly called relief — the provision of consumer goods and services for those in distress. To do so would rapidly ex-

haust its resources and leave it unable to assist with the root causes of distress. The refugee scientist and scholar present a different problem. Putting aside purely humanitarian considerations, all of us have a stake in man's intellectual capital and in the minds which are most likely to widen our knowledge and find its application to human well-being. Hungarian refugees included many students, professors, researchers, artists, and others whose potential contributions had to be conserved. The principal question for the Foundation was not whether it should do something, but what it should do in the light of the other resources being brought into action.

In late 1956 and early 1957 well over \$1,200,000 has been appropriated for those aspects of the Hungarian refugee problem which the Foundation accepted as its special opportunity. Almost \$700,000 went to institutions in Austria, where the main brunt was being felt. Funds were provided to 13 Austrian universities and Hochschulen for allocation by them to more than 60 Hungarian students admitted to these centers of higher learning. Another \$80,000 went to seven of these same institutions to provide stipends for more mature research scientists and scholars who wished to resume their work in Austria. A contribution of \$100,000 was made to the Netherlands Association for the Hungarian High School at Bad Iselsberg, Austria, to relocate a group of younger students who had moved *en bloc* to Austria. The Congress of Cultural Freedom received \$7,000 toward the costs of a Hungarian Symphony Orchestra; the World University Service was provided with \$30,080 toward the expense of its service in Austria; and the Caritas Association of the Archbishopric of Vienna received \$5,000 for books needed for its language training program for Hungarian students.

In the United States, the Foundation provided some \$350,000 to organizations which had promptly accepted

responsibility for lending a hand to Hungarian refugee students and intellectuals. The Institute of International Education was given \$101,000 toward activities financed by several foundations, among them the Ford Foundation and the Rockefeller Brothers Fund, which included the excellent orientation programs arranged by Bard College and St. Michael's College. The National Academy of Sciences received \$180,000 to assist it in its task of interviewing and placing Hungarian scientists. A contribution of \$35,000 was made to the President's Committee for Hungarian Refugee Relief for its placement program. Smaller grants were made to the World University Service, the American National Theatre and Academy, the American Council for Emigrés in the Professions, and the National Committee for Resettlement of Foreign Physicians.

In addition to these special allocations, the Foundation awarded a number of fellowships and other study grants, with funds totaling approximately \$80,000, to individual Hungarians.

Although some effort was made to ascertain whether The Rockefeller Foundation might provide assistance inside Hungary, especially for the damaged clinical facilities of the Medical Faculty in Budapest, these efforts have resulted thus far only in a small gift of medical books to the Medical Faculty through the Hungarian Red Cross.

Medical Education and Public Health

The Rockefeller Foundation was born in 1913 with a deep concern over the then-existing state of the medical sciences, over the desperate shortage of adequately trained doctors and nurses, and over the still primitive public health services through which men, even in the so-called advanced

countries, were trying to defend themselves against epidemic and disease. Over this period of 43 years, more of its funds and staff have been devoted to these concerns than to any other purpose. Its representatives explored conditions in every country; many joined with local authorities to do battle against malaria, hookworm, yellow fever, influenza, tuberculosis, yaws. Large numbers of promising young men and women were sought out for advanced training; large sums were invested in the institutions, in the United States and abroad, which might train them. Research funds were provided to medical schools, departments, and individual investigators to help build up the basic knowledge upon which effective and efficient medical care must rest.

At the heart of these traditional concerns of the Foundation lies the idea that good health is a primary ingredient in what the Foundation's charter calls "well-being," touching as it does man's dignity, his intellectual and spiritual growth, his productivity, and his sense of responsibility for family and fellows. This basic notion continues to play a large role in the Foundation's thinking; practical applications have changed somewhat over the years in response to changes in the scientific, economic, and social environment. There has been no decline in interest on the ground that the Foundation has been interested in medicine for a long time and has done "its share." The fact that more answers are now at hand means that "needs" are greater than ever—more can be done for more people. And it would be to ignore the history of science not to suspect that opportunities of great promise are present beyond the terrain which medical science has explored and occupied in years past.

Many factors in the present scene influence the Foundation's thinking, which, one must remark, is now under intensive review. Some of these are the rapid growth of public health services financed by governments and international

organizations; the rising demands of hundreds of millions of peoples in the non-Western world for prompt improvement in medical care; the multiplication of funds for medical research, many of them committed on a short-term basis for what are by nature long-term undertakings; rising costs of the best medical care, medical education, and medical research; the changing ratio between sources of annual income and invested endowment; questions about the effective and supportable forms of medical care within the community and the region; the changing spectrum of health problems as medical science brings some of the great killers of the past under control and turns to the stubborn degenerative and chronic illnesses of man; the educational problems of training competent doctors within a reasonable time, when there is so much already known to be learned and so many questions crying for investigation; the medical and public health implications of the nuclear age, discussed above. Consideration of factors such as these has brought shifts in emphasis in our medical efforts, but this field remains one of great interest and concern to The Rockefeller Foundation.

During 1956 the Foundation paid considerable attention to professional education, especially overseas, in institutions which now seem likely to be training the teachers of still other medical schools to serve populations demanding vastly improved medical care. Limited as are the Foundation's funds, this type of investment suggests a high return in better health over the longer run; it responds to many urgent requests to the Foundation for assistance in lifting the quality of present training, and it has usually stimulated a much stronger financial effort from others on behalf of the institutions concerned. Details will be found in the Annual Report, but the more important examples of these 1956 grants are:

Christian Medical College, Vellore, India	\$367,400
King George's Medical College, Lucknow, India	299,750
Seth Gordhandas Sunderdas Medical College, Bombay, India	273,300
University of the Andes, Bogotá, Colombia	570,000
Recife Medical School, Brazil	215,000
Paulista School of Medicine, São Paulo, Brazil	105,000
University of Brazil, Rio de Janeiro	63,000
Keio University, School of Medicine, Tokyo, Japan	290,000
University of Ankara, Department of Child Health, Ankara, Turkey	100,000

In addition to these, smaller developmental grants were made as modest stimuli to medical education in some 21 countries, including those listed above.

In the broad field of health care, as distinct from professional education and medical research, the Foundation's interest in recent years has been in studies and experimentation on the effective organization of medical care, taking into account such questions as the distribution and full utilization of the highly trained specialist as well as of the complicated and expensive equipment which modern medicine now employs. In 1956 a grant of \$155,950 was made to the Commonwealth of Puerto Rico, where an effort is being made to work out the proper coordination among government health programs, private organizations, medical personnel in private practice, hospitals, rural health centers, and the University of Puerto Rico Medical School. A Regional Health and Welfare Coordinating Office has been established to lead this attempted coordination and special attention is being given, on a pilot basis, to the 16 municipalities in the Bayamón District Hospital area.

The population problem cuts across many disciplines and, in the Foundation, involves the joint interests of all of its Directors. A 1956 grant, with a strong medical orienta-

tion, was that of \$163,280 to provide four-year support for studies of population dynamics in selected Indian villages being conducted jointly by Harvard University and the Christian Medical College in Ludhiana, with the close co-operation of the Government of India.

In the radiation field, the Foundation does not expect to embark upon a large program of financing research reactors or heavy equipment for radiation therapy. In 1956, however, an unusual opportunity arose at the Massachusetts Institute of Technology which resulted in a grant of \$250,000 in support of medical and biological research. MIT had under construction a 1,000 kilowatt nuclear reactor; by altering the plans to permit an additional port in the under face of the reactor, it becomes possible to direct a beam of nuclear rays into an operating-therapy room underneath, making possible the irradiation of patients immediately after surgery and the utilization of radioactive materials of extremely short half-lives. The location of the reactor in Boston, with the unusual advantages of technical supervision by MIT physicists and engineers and of joint use by several of the outstanding medical groups in the area, was an important consideration in the award of the grant.

Biological and Medical Research

Everyone, by this time, recognizes that science has entered intimately into our daily lives. Physics, which used to be, at least from the point of view of public recognition, chiefly the silent partner of engineering and technology, has over the last decade been literally bombarding all of us with questions which are as perplexing as they are important. The problems of biological and medical research also touch every one of us daily.

To illustrate, the morning newspaper of the day on

which this is being written carries three typical bits of news. Certain soldiers were presumably subjected to "rays" and are reported to have fathered children which have deviated from the normal experience in two ways—fewer in number, and with an excess proportion of abnormalities. This bit of news is very possibly questionable; but it comes against the more substantial background of public discussion as to the biological danger from nuclear testing. Much of this discussion is confusing, but one thing is very clear: we need to know a great deal more about human genetics and radiation biology.

The paper also warns that there is an epidemic in the Far East caused by a possibly new and unknown strain of influenza virus. Here is a good example of the interrelatedness of the modern world. Science and engineering, plus commercial enterprise and the accelerating pressures of defense, have produced a rapidity and universality of air travel which make it clear that microorganisms in one part of the planet will soon and inevitably appear in other parts.

To deal with such a menace, there is required the full armament of modern science: public health measures and epidemiology; the subtle tests of the serologist; all the skills of the physician; the resources of hospitals; and back of and underneath all this, the modern microbiologist with his chemical and physical colleagues, using electron microscopes, super centrifuges, electrophoresis, chromatography, etc., etc., to probe the secrets of the virus itself.

Even on the financial page of the same paper there is science news. What is 9-alpha-brom-11-keto progesterone, and why does Wall Street care? The most exquisitely precise, patient, and basic researches of organic chemists and biochemists have demonstrated that it is possible to affect the tendency of a cell to run wild and be a cancer cell if one can in some way control the processes by which this cell manufactures, within itself, certain substances known as

nucleic acids. The multiple-syllable substance just named has shown some preliminary and hopeful promise of being able to affect nucleic acid metabolism in this useful way. A rumor gets loose about this, and a pharmaceutical stock moves up \$4.62 a share in one day.

The body of activity which, in The Rockefeller Foundation, comes under the organizational label "Biological and Medical Research" is based upon program concepts that are illustrated by these three items of daily news. A major one of these concepts—one which has influenced our program for many years—is that biology, like physics, is no longer a hidden and esoteric ritual of remote laboratories, but is a scientific activity—also a social and an artistic activity—which is of immediate and daily concern to everyone. Often it patiently lays the careful foundations on which medicine and agriculture can build. Often it enriches our lives by giving us new and deeper understandings of the complicated and beautiful order of living nature. So useful and powerful has it become, so intimately does it now affect us, that it often moves promptly from the laboratory to the daily press.

A second concept that comes to the surface in the news articles is that biology is no longer a special and somewhat isolated division of science. As someone remarked recently, it is getting harder and harder to recognize a biology laboratory by looking in through the door. There was a time when one would see chiefly microscopes, dissecting equipment, specimens being mounted, whole animals being studied. Nowadays one occasionally sees these things still, of course; but he is more apt to see refrigerated centrifuges, spectrophotometers, electron microscopes, all sorts of equipment for chromatography, carefully controlled constant-temperature chambers, petri dishes and test tubes, equipment for measuring radioactive isotopes—even high energy sources: in other words, such devices that one is hard put to it to

guess whether he is looking in at physics, or chemistry, or biology.

Actually the partnership is an even wider one. Modern experimental biology is not only linked in a mutually effective interrelationship with all of the physical, medical, and agricultural sciences; it is also linked into the practical problems of everyday modern life. One cannot, for example, take an intelligent and informed attitude toward certain problems of international relations—as for example the question of nuclear weapons testing—without getting involved in so biological an issue as the importance of the gene mutations which can be brought about by radiations.

DOES BIOLOGY STILL EXIST?

The older practitioners of the biological art were concerned primarily with intact animals—their description, their classification, and the way they acted. Later they found it useful to go inside the skin, so to speak, to study the internal organs and systems: How did they function, how were they interrelated? Only a little more than a century ago came the unifying generalization that all living things are composed of cells. The scientific tools that were available over the earlier portion of that century were reasonably well adapted to the study of objects of the size of cells—say one-thousandth of a centimeter, although there are, of course, much larger single cells, such as the yolk of a hen's egg. But physics and chemistry, chiefly since the turn of the present century, have devised more delicate tools and techniques, capable of dealing with objects many times smaller than a cell. Thus an ordinary simple non-organic molecule, like that of water or salt, is smaller than a cell by a factor of ten thousand; and the nucleus of an atom, inside which the modern physicist "works," is smaller still by a further factor of a million.

All of this has brought it about that many modern biologists, eager to run truth to ground, have pursued their problems on a finer and finer scale of dimensions. They are concerned not with bats or bugs, not with hearts or hypothalamus, not even with cells, but with life on a molecular or even atomic scale. Thus biologists are, at the moment, intensely concerned with the details of the atomic architecture of the substance which they nickname DNA (short for desoxyribonucleic acid), talking on the scale of a hundred-millionth of an inch as to the exact location of this or that amino acid portion.

Does this mean that *biology* no longer exists? Is the whole story to be spelled out in physical-chemical detail on a molecular level?

The synthesis of urea, a century and a quarter ago, made untenable the vitalist position that the chemical events which occur inside a living creature are so special that they can never be caused to take place in a glass dish. And yet no one—almost no one, at least—doubts that the phrase “a living organism” relates to something which is elusively more than the sum of a lot of small, quantitatively describable parts.

It is well to let a great biologist answer the question, and we call on that long-time and highly regarded friend of our organization, Professor A. V. Hill of London. In his essay *Why Biophysics?*, and speaking of an earlier lecture he gave many years ago, he said:

On that former occasion in Philadelphia in 1930 I spoke on the rather cryptic title ‘The Physical Reasonableness of Life’: it allowed me to expound a faith that no limit will be found at which the application of physical methods and ideas—and of course that implies chemical ones too—will be forced to stop in the investigation of living processes. I was at pains to emphasize that this certainly does not imply that biology will finally become simply physics and chemistry—at least as one knows those subjects now: indeed the boot is

rather on the other leg, physics and chemistry have in the end a great deal to learn from biology, in their philosophy and ideas, as well as in their opportunities for research. It is obvious indeed, at least to those biologists who know something about the properties of the nervous system, that physical theories and concepts can have no absolute validity apart from the brains that conceive and use them: if they *can* be conceived by the brain, it seems most unlikely that their pattern is not conditioned, and to some degree determined, by the properties and machinery of that organ. . . . Physics and chemistry will dominate biology only by becoming biology. We can live in hope of the future unification of biological and physical science—but need not fear at all the dreadful prospect that life will be explained away in terms of present-day physics and chemistry.

BIOLOGY, CHEMISTRY, AND PHYSICS

During 1956 there were made four rather substantial grants of a general character: for the library at the international research station at Naples, for biological research at Amherst, for research in the natural sciences at the University of Mexico, and for biology, experimental medicine, and surgery at Copenhagen.

There were three grants aimed at increasing useful knowledge in an area which is of increasingly obvious importance in the less favored parts of the world—ways of meeting the protein requirements of children, especially over the critical years after weaning. It has become clear that this is a major nutritional problem in many populous countries, and some experts have even called this the number one public health problem for vast numbers of persons. The largest of these three grants was made to the National Research Council, and is being administered in close relation to the global program of UNICEF.

A large number of the grants of 1956, moreover, were rather more specifically in fields indicated by the general remarks of the preceding two sections. That is to say, they

aided researches in which biology is intimately teamed up with chemistry, with physics, and even with mathematics. Eight of the year's grants, totaling about \$400,000, were in the general area of biochemistry, most of these projects being in Europe. There were also three projects in biophysics, geographically located in the United States, in Chile, and in Finland. And there were two projects which will try to bring the resources of modern statistical methods to bear on biological and similar problems.

RADIATION AND GENETICS

Already noted above was Foundation support for the studies of the National Academy of Sciences of the biological effects of radiation. An important part of this contribution of the National Academy was in calling attention to gaps—in some cases one is justified in saying dangerous gaps—in our knowledge. One of the most difficult and important of these is in the field of genetics, and especially human genetics.

During 1956 The Rockefeller Foundation made nine grants totaling \$991,000 for research in genetics. Four were made in the United States, the largest, \$350,000, to Indiana University for the work of Professors H. J. Muller, T. M. Sonneborn, and R. E. Cleland. Others went to Amherst College (\$100,000), the Johns Hopkins University (\$100,000), and the University of Wisconsin (\$25,000).

One of these grants went to the University of São Paulo, Brazil, in South America, where genetics research is advancing impressively.

Four were made in Europe—to the University of Copenhagen, Denmark, (\$260,000), to the National Center for Scientific Research, Paris, (\$61,000), to the State Institute for Human Genetics, Uppsala, Sweden, (\$50,000),

and to the London Hospital Medical College, England, (\$24,000).

VIRUS RESEARCH

The Rockefeller Foundation's program for the investigation of virus diseases is at present concentrated upon those viruses which are transmitted by insects, and which then infect birds, the lower mammals, and man. Several of these agents, notably those causing yellow fever, dengue, and the encephalitides which afflict horses as well as man, have been known for some time as serious public health problems.

By the use of modern techniques, viruses are often isolated from mosquitoes, from "sentinel" birds or mammals, or from human beings with mild fevers, before their recognition in terms of their clinical results. It thus remains to search for the diseases which they may cause and to determine the appropriate conditions for their appearance. Some idea of the speed with which the art is progressing may be suggested by the fact that when the present program started in 1949 approximately 15 insect-borne viruses had been identified; by the fall of 1956 the number had been increased to 50. A few of the original isolations have been made by other groups of workers, but all of the new strains have ultimately been referred to the Foundation's laboratory for classification and now are included in its reference collection. The great majority originated in the field laboratories maintained by The Rockefeller Foundation in collaboration with various local authorities in Trinidad, Brazil, India, South Africa, and California.

Informal collaboration is being increasingly developed with laboratories maintained by other organizations: in Cairo, the U.S. Navy; in Nigeria, the West African Research Council; in Uganda, the East Africa High Commis-

sion; and in Singapore, the University of Malaya. In specific terms, collaboration with these institutions is carried on through exchange both of information and of biological specimens, the making of occasional grants for equipment, and the training of research fellows.

A long-term objective of the program is the understanding of the relationships between viruses in terms of genetic and evolutionary theory. Presumably the agents which we study today have all been derived from one or more parent stocks by a process of continuous adaptation to the mammalian and avian hosts and insect vectors available at different times and in various ecological areas. Just how this has come about is a matter of great intrinsic interest, and its study also prepares the way for rapid understanding and control of new diseases as they may arise by mutation and selection in the future.

To this correlated program of field studies of viruses, aid to collaborating groups, and support for basic research in virology, The Rockefeller Foundation devoted, during 1956, approximately a million and a quarter dollars. Among these were grants of \$165,000 to Washington University, St. Louis, Missouri, \$73,800 to the University of Malaya, Singapore, \$60,000 to the Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia, and \$48,000 to the Cornell University Medical College, New York.

Agriculture

In 1956 the Foundation published a special brochure, *The Agricultural Program of The Rockefeller Foundation*, which is available upon request to those who wish to have a comprehensive and up-to-date account of its activities in that field. Launched more than 13 years ago by the dispatch of a single staff member to Mexico, the agricultural program

has grown steadily in scientific significance, in the commitment of Foundation funds and personnel, and in contributions to increased production and higher levels of nutrition. Its emphasis is upon basic food crops rather than upon those products which are essential raw materials for industry. Its eventual target is more food for the underfed, in the countryside, villages, and urban centers of countries where human dignity is not yet adequately supported by a healthful diet, and where the struggle to raise food absorbs so much time and energy that other activities cannot prosper. Its economic assumptions are relatively uncomplicated, some might say unsophisticated; one is the notion that men who toil for their food on the land will be better off, and better able to serve their urban neighbors, if that toil and that land can produce more food through improved varieties and techniques; another is the notion that, if mankind is to find its food in the years ahead, there must be a rapidly widening understanding and use of scientific agriculture. The program is a companion piece to the Foundation's work in public health and medical care and is one of its chief contributions to the so-called population problem. It is another venture in private technical assistance and continues the search for more effective methods of rendering aid, a constant preoccupation of private philanthropy.

The agricultural program uses a variety of techniques, all having as one of their purposes the multiplication of returns from modest investments. These techniques include: research by the Foundation's own staff of agricultural specialists; the advanced training of agricultural scientists; the demonstration of the vital partnership between education, research, and extension in achieving increased production; international collaboration in research and development; the wide dissemination of findings and experience through technical papers and other publications; and selective grants

to universities and other institutions in support of basic research on questions of potential importance to agriculture.

DIRECT OPERATIONS

Upon the urgent invitation of the Government of Mexico, a cooperative research base and training center was established some 12 years ago adjoining the National College of Agriculture at Chapingo, near Mexico City. At present 17 Foundation staff and approximately 70 Mexican associates make up the Office of Special Studies of the Ministry of Agriculture, a joint venture with wide responsibilities for research and training. The crops under investigation include wheat, corn, beans, potatoes, garden vegetables, sorghums, soybeans, and forage legumes and grasses. Studies of poultry improvement have recently been added to the work. Indispensable to the effective use of resulting improved varieties is supporting work in such fields as the control of pests and plant diseases, the efficient use of fertilizers, and improved agronomic practices in the choice and mode of planting and cultivation of the crops. It has also been essential to maintain close and active relationships with the National Extension Service and agencies like the National Corn Commission responsible for the multiplication and distribution of seed to the farmers.

Additional research centers have been established by the Ministry and the Foundation in the States of Morelos, Guanajuato, Vera Cruz, and Sonora; cooperative research relates the program to state experiment stations in the States of Mexico, Hidalgo, Oaxaca, and Tamaulipas, to the colleges of agriculture at Chapingo, Monterrey, and Saltillo, and to federal experiment stations in the States of Jalisco, Sinaloa, Sonora, Chiapas, and Coahuila. Experimental plantings have been established on a large number of private farms.

In 1950, against the background of the experience in Mexico, a smaller but similar program was initiated in Colombia, where 11 Foundation staff and some 40 Colombian colleagues now comprise the Office of Special Investigations of the Ministry of Agriculture. First attention was given to work on corn and beans at the Federal Agricultural Experiment Station at Medellín and on wheat at the La Picota station near Bogotá. Potatoes, barley, forage crops, and green manure crops were taken up later and activities extended to Palmira, Bonza, and Montería; work in the high savannah was shifted from La Picota to an excellent and extensive new agricultural experiment station, Tibaitatá, only a few minutes' drive from Bogotá.

Just two years old is an additional cooperative arrangement concluded between the Foundation and the Ministry of Agriculture of Chile, where Foundation staff has begun to arrive and where first steps are being taken to launch studies of wheat and forage crops.

During 1956 a joint decision was made by the Government of India and The Rockefeller Foundation for a cooperative program based at the Indian Agricultural Research Institute, near Delhi, the first interests of which will be improvement in the corn, wheat, and other cereal grain crops which so largely feed the Indian populace, together with broader questions of advanced agricultural training and research. Two senior Foundation staff arrived in India early in 1957.

These four operating programs have some elements in common, but even more important are the variations which reflect adaptation to the circumstances in each country. The friendly, informal, and cooperative relationships between ministries of agriculture and a private foundation make it relatively easy jointly to devise plans which bring to bear upon the needs of a particular country the specialized resources which the Foundation can offer.

In the brochure, *The Agricultural Program of The Rockefeller Foundation*, certain principles of operation were noted by J. George Harrar, Director for Agriculture, who was the first agricultural staff member of The Rockefeller Foundation. Since his views rest upon an unusually rich experience in this type of activity, these principles are repeated here as of possible general interest:

1. Cooperation is the key principle, and it starts with an invitation from the host country to The Rockefeller Foundation to collaborate in a program of food improvement and with the agreement of the Foundation's Trustees to undertake the joint effort.

2. Operating programs are then organized as integral parts of the Ministry of Agriculture of the host country and are affiliated with its appropriate agricultural agencies.

3. Staff scientists for these foreign assistance programs are selected by The Rockefeller Foundation on the basis of high personal and scientific quality; they and their families must be persons who welcome an opportunity to serve the aims of international agriculture on a career basis.

4. Programs are designed to fit the economic and cultural framework in which they are set. They are intended to accelerate natural processes of evolution rather than to create agricultural revolutions.

5. Emphasis is steadfastly on research, leading to the improvement of the quantity and quality of basic food crops in the country involved.

6. Results of research are made available as rapidly as possible to agencies which are responsible for seed multiplication and distribution and for extension activities. Attempt is made to publish results promptly in technical bulletins, popular circulars, and through the medium of professional journals.

7. The entire operation is carried out in close association with local scientists, who participate in every phase of the program—initially as junior associates and ultimately as research leaders. The educational phase includes in-service training, a scholarship and fellowship program, and the training of young agricultural scientists from other nations who will subsequently return to positions of greater responsibility in agricultural education and research in their own countries.

8. International collaboration is promoted whenever compatible with the basic aims of the local programs.

9. Terminal dates are not established at the beginning of collaboration; rather it is understood that the joint effort will continue to the point at which Foundation assistance is no longer necessary to its continuing success.

TRAINING

In the longer run, the success or failure of cooperative undertakings like those described above will depend upon roots which penetrate into the local situation and the readiness of local leadership not merely to maintain but to build upon and improve what might be accomplished initially as a joint venture. In the shorter run, of course, such programs would be impossible without close collaboration between local and Foundation scientists on problems which call for the highest possible competence from both sides. Advanced training, moreover, provides the opportunity to assist in spreading knowledge and the techniques for its effective use into a great many countries where more highly organized programs are not established. It would be difficult to exaggerate, therefore, the importance which the Foundation attaches to the development of personnel, including its own.

The operating programs, as has been indicated, play a major role in training. For example, more than 400 young Mexicans and some 85 other young scientists from Latin America and the United States have received training through service in the Mexican program; to these must be added the flow of visitors from countries in other parts of the world who spend varying times in observation of the work in progress. The Foundation also makes funds available for fellowships, scholarships, and other types of study and travel grants. During 1956, 204 individuals from 30

different countries availed themselves of these opportunities for further work in agriculture.

INTERNATIONAL SCIENTIFIC EXCHANGE

The Rockefeller Foundation is only one of many agencies and institutions working across international frontiers to improve the basic supply of food, and the funds which it allocates are a small portion of a large total effort. It is glad to play a part in a number of arrangements for international scientific exchange among such agencies and institutions and has found in practice that great mutual benefit results. One of these is the Central American Corn Improvement Program, to which the Foundation contributes a staff member and genetic materials developed in its other programs. The Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica, and the U.S. International Cooperation Administration (ICA) also share in a regional development whose principal partners are the Ministries of Agriculture of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. At present this program centers attention upon providing well-adapted, high-yielding varieties of corn for tropical conditions and upon the training of young agricultural scientists.

The systematic preservation of genetic stocks of the basic food crop plants becomes increasingly important as native strains give way in general use to improved open-pollinated varieties, synthetics, and hybrids. If not periodically replanted and carefully stored, genetic material may be irretrievably lost and thus not available as crucial ingredients in future breeding. Germ plasm banks were established at the beginning of the Foundation's program in Latin America, banks which now include germ plasm for corn, wheat, beans, forage crops, grasses, sorghums, and vegetables. The Foundation cooperates with the Maize Com-

mittee of the National Research Council and its seed centers in Mexico, Colombia, and Brazil, and with the Department of Agriculture's germ plasm centers at Beltsville, Maryland, and Ames, Iowa. Similarly, the Foundation participates in the uniform testing program for wheat at centers which the U.S. Department of Agriculture helped to set up in Brazil, Argentina, Chile, Ecuador, and Peru by sharing its materials and findings from Mexico and Colombia.

The Foundation also cooperates in international research on the late blight disease of potatoes and, because of certain unique testing conditions in central Mexico, has been able to contribute to what may be a basic solution to this century-old threat to an important element in man's food supply.

A third type of useful scientific exchange results from well-prepared meetings of specialists where ideas and experiences can be shared and channels established for easy exchange after delegates return home. Recent examples of such meetings in which the Foundation played a part were the Latin American Plant Breeders, Plant Pathologists, Entomologists, and Soil Scientists conference in Colombia in 1955, with 150 delegates, and a conference in 1956 of 50 leading plant pathologists from Latin America, the United States, and Canada, who came together in Mexico to assess man's never-ending battle against cereal rusts.

GRANTS

With its own agricultural staff heavily preoccupied with the types of research and training already described, the Foundation broadens and deepens its agricultural program through selected grants to other institutions. In one group are grants for basic research, where competent investigators are trying to throw additional light upon important questions and where the large sums now available from other

sources for agricultural research do not, for one reason or another, suffice. Examples in 1956 were the five-year \$111,900 grant to the Earhart Plant Research Laboratory (California Institute of Technology) for studies of the chemical mechanisms through which unfavorable climatic conditions limit or prevent plant growth and the extent to which treatment with certain metabolites may be able to modify plant responses; a five-year \$105,000 grant to the Boyce Thompson Institute for Plant Research for an investigation of modifications in the biological effects of fungicides brought about by minor changes in the composition or atomic arrangement of the organic compounds being used; \$60,000 to the University of Minnesota to assist for a three-year period the exploration of the part played by heterocaryosis and nuclear dissociation in the production of virulent races of wheat stem rust and of other related questions; \$36,000 to Kansas State College for studies of the basic biochemical and physiological changes occurring in stored grain; and \$24,000 to Iowa State College for a three-year study of the distribution and ecology of soil nematodes. Six lesser grants would belong to this group.

If scientific agriculture is to be allowed to make its potential contribution to economic and social improvement throughout the world, large numbers of specialists, educators, and administrators must be trained as speedily as possible. This will require an expanded and sustained effort to improve agricultural education both in numbers of institutions and, more important, in quality. The size of the need and the variety of local circumstances point to local, national, and regional institutions. The trek of young scientists to a few leading centers in the West will undoubtedly continue, and will be eminently worthwhile, but the main job must be done by universities, agricultural colleges, and research institutes scattered around the globe. A second group of Foundation grants, therefore, has served to strengthen some of

the more promising of these institutions. In each instance, the Foundation's contribution is a small fraction of the total budget but the grant fills a specific practical need and serves to stimulate and encourage a stronger local effort. During 1956 the larger of these grants went to the following:

University of Chile, College of Agriculture	\$300,000
University of the Philippines, College of Agriculture	250,000
Rural University of the State of Minas Gerais, Brazil, School of Agriculture	200,000
National School of Agriculture, La Molina, Lima, Peru	87,000
Balwant Rajput College, Agra University, India	80,000
University of Rio Grande Do Sul, Brazil	75,000
Catholic University of Chile	68,000
Kasetsart University, Thailand	50,000
University of Costa Rica	50,000

A third type of grant is concerned with the broader aspects of agriculture, such as the better utilization and conservation of primary natural resources, agricultural administration, and the economic, sociological, and political questions which bear upon man's capacity to wrest a better living from his environment. Two grants made in 1956 are illustrative. The one was a three-year grant of \$153,600 to Harvard's Graduate School of Public Administration to assist a seminar which offers advanced training in new methods of water conservation and management. The seminar enlists not only the diverse resources of the university but the cooperation of governmental water resources agencies and of private business. The other was a grant of \$85,000 to the Commonwealth of Puerto Rico for a survey of insular agricultural agencies looking toward their more effective coordination. Grants in this category are normally considered jointly by the Director for Agriculture and the Director for Social Sciences.

Man in Free Societies

Societies can be characterized, in a rough way, by their ultimate values and by the institutional means through which they seek to realize these values. In free societies, at least, neither the value ends nor the institutional means are likely to be completely harmonious at any given time, and both change discernibly. People who have the liberty to do so will differ, often volubly, about ends and means; compromises, a precondition for group and national life, will result in gaps between profession and performance. Moreover, in the daily round, the distinction between ends and means is usually a shadowy one, for each partakes of the other. The political methods of democracy are ends in themselves, devised to afford comfort and latitude, as well as restraint, for a wide range of individual moral choices, differences of opinion, and diversity of tastes.

The public life of a free society is marked by continuing discourse about what we are after and how we ought to try to achieve it. Sometimes the debate is articulate and even turbulent, sometimes it is muted by the routine of daily chores. What is "good" government? a "wise" or "realistic" foreign policy? an "adequate" defense effort? a "proper" division of power? a "sound" monetary policy? a "fair" wage? an "equitable" distribution of income? an "adequate" social security system? or a "healthy" community? The discussion is sometimes abstract but more often practical, involving the conflicting desires of individuals or groups to improve their relative positions, the choices necessary in allocating resources which are not large enough to go around, the division of income between that which can be spent with comparative freedom of choice and that which is spent collectively through taxation.

That the structure and dynamics of our society should have become a separate branch of scholarly study is not in

the least surprising. Social scientists, as anthropologists, economists, political scientists, lawyers, and sociologists, concern themselves with the analysis of social, political, and economic institutions in their ever-shifting forms and relationships. Nearby are the philosophers, asking questions about moral, legal, political, and social issues—weighing, suggesting, speculating, inventing. A static society, theoretically, would have little need for such efforts, except perhaps to prepare for the young and for foreign readers tidy descriptions of its unalterable goals and rigid institutions. In totalitarian societies the social scientist has likewise a circumscribed role. But free citizens in free societies can and do believe that they can shape and reshape their social values and remould their social institutions. If in dealing with such important matters knowledge be preferred to ignorance, informed discussion to loose chatter, rational analysis to horseback opinion, and a reasoned forecast of probable consequences to a blind leap in the dark, then painstaking, rigorous work in philosophy and the social sciences is a contribution to the working of a free society which a free society cannot afford to be without.

Different societies profess different conceptions of the good life and have evolved a wide variety of institutional means to promote it. In a world of nation-states each will usually espouse its own system of values against other systems and oppose such policies and overt behavior on the part of other nations as appear to threaten its own values and the freedom of its people to pursue them. Antagonisms therefore develop which are not moderated by law but are resolved either by diplomacy or violence. Similarly, values and institutions shared across national frontiers exert a gravitational pull, drawing nations together in tightly or loosely knit groupings. Consequently, comparative and international studies in economics, political science, sociology, social philosophy, religion, and ethics are more needed than

ever, if only to enable us to appreciate events abroad for their significance for our own way of life and to give us some foreknowledge of the probable international repercussions of emerging developments here at home. Beyond that minimum lies the possibility—and in the nuclear age, the necessity—of wiser action and more refined skill in resolving conflicts without resort to violence.

Foundation grants in 1956 for work in the social sciences, broadly interpreted, may be summarized conveniently under four headings: the basic social sciences, legal and political philosophy, economic development, and international relations.

THE BASIC SOCIAL SCIENCES

In 1929, after the consolidation of the Laura Spelman Rockefeller Memorial with The Rockefeller Foundation, the Foundation began to seek ways and means for strengthening the basic social sciences as scientific disciplines. It has not fretted unduly about whether the term "science" is properly used for the study of man and his social relationships, nor about whether the methods of the natural sciences, directly or by analogy, are wholly relevant or helpful to such studies. The layman probably reads into "science" more than does the scientist and forgets the groping, the false starts, and the frequent revisions of ideas which have kept the "hard sciences" mobile and fluid. Without any doubt there has been a steady accumulation of systematic knowledge about social affairs; it is appropriate to call this knowledge science, especially if by so doing goals and standards are set for what remains to be done. Facts, if ascertainable, are likely to be more useful than guesses; the testing of hypotheses is a wholesome corrective for the stubborn mythology which plagues social problems; the search for the slender threads of theory which show the way through the

labyrinths of social behavior is more rewarding than to give up in despair.

During the year under review, \$98,400 was appropriated to the Computation Center of the Massachusetts Institute of Technology to permit further exploration of the uses of an advanced high-speed digital computer in the solution of theoretical and applied problems in the social sciences. The University of Chicago received \$45,400 in support of studies of the theory of consumption, under the direction of Mrs. Dorothy Brady. The Scripps Foundation for Research in Population Problems of Miami University was granted \$40,000 for a new study, using new techniques of analysis, of the main factors influencing population growth in the United States, one result of which might be more accurate forecasting of future population. Yale University received \$34,000 and the Institute of Economic Research of Munich \$24,500 for work in economic forecasting. A number of smaller grants, together with funds currently at work from earlier appropriations, also reflect this long-range program interest.

LEGAL AND POLITICAL PHILOSOPHY

About four years ago, The Rockefeller Foundation undertook a modest program of encouragement to legal and political philosophy, fully realizing that funds alone can do little to stimulate speculative thinking. In the first decades of this century, political scientists and lawyers were necessarily caught up in reform movements and in the immediate task of blueprinting new and expanding systems of public administration, social services, and the administration of justice. They brought to this task a high order of intelligence, energy, and resourcefulness. Prompted by circumstances, they helped to work out imaginative responses to the complicated problems of a rapidly expanding industrial

society. However, their efforts left them little time for the elaboration of more general theories of democracy, law, or administration. The scholars are frank to call this their unfinished business. In consequence, the decade following World War II has witnessed a resurgence of interest in the broader issues of law and politics which in earlier times were the province of philosophers and statesmen. Younger scholars, particularly, have begun to respond, however haltingly, to the challenge of this need; in large measure, their activities have had first call on the interests of the Foundation.

Three lines of approach can be identified. First, some scholars of law and politics, in pursuit of more general principles, are returning to the study of the classics of the Western and non-Western world. They seek to understand more clearly this body of enduring ideas and accumulated wisdom, especially as it bears on perennial problems of law and politics such as justice, freedom, power, and virtue. The philosophers of natural law have occupied the attention of a small but vital group of younger theorists anxious about the possible undermining of natural rights in mass societies and skeptical about some current theories justifying fundamental rights. A few examples may illustrate this interest. The Foundation has made grants for research on Thomistic legal and political thought, on the classical background of modern political theory, and on the idea of justice and virtue in Greek political thought. Other scholars have turned to the more recent classics of John Stuart Mill, John Locke, Edmund Burke, and David Hume; still others are investigating the underlying political and legal philosophy of jurists and statesmen like Justices Holmes and Brandeis, and Abraham Lincoln. Already these studies give evidence of illuminating significant truths, embedded in the great writings of the past, which hold relevance for the present era. Taken together they constitute a re-examination of the significant values, ideas, and concepts that are the legacy

of political speculation on fundamental problems since Plato and Aristotle.

Another promising trend results from attempts to grapple with the pressing issues of contemporary societies. It is obvious, for example, that the problems of constitutionalism, political representation, federalism, freedom and order, and civil liberties have taken on new urgency throughout the world. The rapid rise of new states and the growth and transformation of older ones demand that ancient concepts be reinterpreted in a new context or that more penetrating concepts be fashioned. This concern lies behind a number of studies encouraged by the Foundation: the doctrines of the Supreme Court concerning civil liberties, the origins of modern legal institutions and representative government in the West, changes in the concept of property, the relationships between the legal systems and the official political ideologies of modern totalitarian states, the assumptions and goals of criminal law, the British concept of the judicial function, and legal problems of the welfare state.

A third approach is the quest for new and relevant political concepts that will reduce the study of political behavior to tractable proportions. Without a few ordering concepts to demarcate the field of politics or law from other social spheres, the scholar can scarcely orient himself in a maze of empirical phenomena. Promising newer concepts that have been elaborated and applied are power, interest groups, decision-making, and forms of leadership and organization. Some scholars predict that concepts of this kind hold the key to the discovery of what is recurrent and typical in the jungle of events. They are attempts to focus on the political process as a whole or in part, on the way governments make decisions, and on how they get and keep authority and power. In this the emphasis is on critical analysis and interpretation rather than on the amassing of facts.

The Foundation has sought to respond to this revived interest in theoretical work by encouraging younger scholars on these three fronts. It has provided substantial assistance to three major programs at California (\$200,000), Columbia (\$75,000), and Harvard (\$50,000). In addition, it has awarded individual grants to 57 younger scholars who have been identified by a group of distinguished consultants to the Foundation. Finally a few distinguished senior scholars who have already made definitive contributions have been encouraged to bring important and original work to completion. During 1956 grants totaling \$96,447 were made to aid both younger and senior scholars.

ECONOMIC DEVELOPMENT

In the opening portion of this Review the expanding activities of The Rockefeller Foundation in Latin America, Asia, the Middle East, and Africa were discussed. All the programs of the Foundation are involved; direct contributions are thereby made to the economic and social development of countries whose needs and aspirations presently outstrip their capabilities. The Director for Social Sciences has a special responsibility for recommending assistance to the examination of the complicated problems of development. The experience of the postwar period suggests that these problems are not always understood either in the countries attempting rapid development or in those which are trying to assist the process. The "revolution of rising expectations" is injecting new values and aims into economically less-developed countries where long-familiar institutions are often ill-suited to the new aims. Evidence accumulates that for them merely to borrow institutional forms—parliaments, free elections, free contracts in free markets, central planning, and so on—from the economically more developed countries, stripped from the context of the value

systems and ancillary institutions in which they evolved, does not assure orderly and rapid development. The task almost surely becomes the creative one of adjusting established institutions on the local scene, combined with discriminating borrowing from the experience of others. Further, the prospect is that development is unlikely to move very far by means of lunges at narrow sectors of the national life; enduring progress requires advance on a broad front, including education, health, productivity, law, political processes, and public understanding.

The following grants illustrate the special attention which the Foundation is giving to problems of development:

Vanderbilt University, for its Institute of Research and Training in the Social Sciences..	\$150,000
Tulane University of Louisiana, for Latin American Legal and Social Studies.....	114,000
Stanford University, for its Food Research Institute	96,000
International Bank for Reconstruction and Development, for its Economic Development Institute	50,000
Center of Latin American Monetary Studies, Mexico City	36,300
Dutch Economic Institute, for the training of economists in economic development	29,400

These grants, it should be noted, are in addition to the several millions of funds made available directly to countries undertaking a major development effort.

INTERNATIONAL RELATIONS

Today's quest for well-being is shaped by massive technological and social changes which make all men neighbors—but neighbors afflicted with rivalry and possessing capacities for mutual destruction. In consequence, the prob-

lems of international relations take on a new urgency and the resolution of the most threatening ones becomes a stark necessity. Men seeking the good life turn their eyes to the goals of freedom, justice, and social and economic progress. Some of these ends can be reached within separate national communities, but others call for cooperation and accord among societies which can no longer live unto themselves alone. Their interaction constitutes the fabric of international relations. The manifold activities of the more limited organs of Western civilization such as NATO, and beyond them the United Nations and its Specialized Agencies, are founded on a growing consciousness that national values, if they are to be preserved, must be shared, not isolated or hoarded. This lesson was embodied in the principles and purposes of the Charter, but perhaps its meaning is most eloquently attested in the daily workings and emerging consensus of representatives and states striving together to strengthen the international society.

Knowledge and understanding and, ultimately, the improvement of countless forms of international cooperation would be a sufficient justification for the responsible study of international relations, even without the specter of thermonuclear war. Though the Foundation has no illusions that scholarship alone can transform the international scene, it believes that the dark corners of ignorance and misunderstanding of international behavior call for light and illumination. Do we know enough, for example, about the capacity of multilateral diplomacy to settle disputes? What are the techniques by which consent can be achieved while safeguarding national identity? How are negotiations advanced or retarded by the necessities of debate in an open forum? How best can we combine the fruitful methods of traditional and parliamentary diplomacy? One of the functions of rational analysis and discussion is to bring problems and institutions down from the pedestal of lofty intention to the

level at which political and economic action take place. At this point the serious student or observer may have a lasting contribution to make.

From its origin, the Foundation has labored to encourage the development of individual talent as indispensable to any other effort. It is not surprising therefore that it attaches great importance to individuals of capacity and character in the realm of international studies. Some observers, appraising our human resources, lament the fact that talent seems always to be in short supply. Perhaps as our problems multiply in number and in baffling complexity, we shall have to live with this condition in all spheres of human activity, but there may also be more imaginative ways of responding to the challenge.

The search for intellectual resources and the concern for the individual is expressed in three program activities in international relations. First, there is need for assistance of a more continuing nature to a few extraordinarily able younger scholars engaged in research of a fundamental character. About a dozen grants have been made to young professors in universities throughout the country whose research interests run the gamut of theoretical and contemporary problems. Their studies suggest that it will not do to hold to a narrow and parochial definition of international relations. For example, a young Dartmouth scholar is analyzing the techniques of accommodation in modern diplomacy. Another inquiry is addressed to problems of representation and voting in the United Nations. Concepts in the theory of international politics is another focus and the principles underlying the foreign policies of several recent Secretaries of State are objects of investigation in two other inquiries. Problems of Franco-American relations and a comparative study of British and American foreign policy provide a means of exploring the decision-making processes at work in the making of foreign policy in three of the

principal Western states. Interest and ideology in Soviet foreign policy is the core of another such investigation. The need for thoughtful analysis of non-Western societies is of course equally great; such analysis is exemplified in a few of the studies to which the Foundation has given support. Marxism and the Asian intellectuals is the subject of study designed to trace how the Marxist outlook penetrated Asian thought and to estimate its influence on Asian policies today. A study of political parties and programs in East Africa by a young professor at the University of California in Los Angeles is one of the first attempts to examine the workings of the political process in a significant sector of that increasingly important continent. Foreign policy-making in a rising new Asian state with recently established institutions of government is the target of a study of the foreign policy of Ceylon. The Foundation welcomes the diversity of interest and approach represented in the research of this group of unusually able younger scholars and hopes it may play a modest role in assisting them as their promising studies unfold. The importance of their research is exceeded only by the weight given to their professional growth and development.

Second, it often happens that a more mature scholar has research on which he would like to embark or which could be completed if support were available. Sometimes it may be a distinguished international lawyer, at other times a renowned theologian, and again an experienced diplomat with rare qualities as an historian who have significant contributions to make. Occasionally social scientists who already have added much to the corpus of knowledge come in the twilight of their careers to the point of a final, definitive work. In international studies, where wisdom born of experience is a master virtue, the Foundation would hope it might use its good offices to lend encouragement at least to a few individual efforts of this kind.

Third, institutes, while not essential to individual research, may in some cases provide mutual stimulation and mature guidance, and contribute much to intellectual growth. Often the training functions of a sound and successful research institute are underestimated. Senior scholars toiling with junior colleagues in research may accomplish much. In the best of circumstances, an institute may become a community of scholars in the old sense. Then mutual criticism can become a priceless ingredient in a quest for more adequate means of description and analysis of those baffling problems that confront actors on the international scene. It may be that the nature of these problems requires that the rigorous discipline of the qualified scholar be associated with the wise grasp of the trained practitioner in foreign affairs.

The problems of international politics present the scholar with a strikingly difficult challenge, arising from the substance of the issues with which he deals. On the one hand, he is easily tempted to view his task as the solution of current problems. If he takes this responsibility too literally his discipline may degenerate into hasty excursions into immediate problems which are rarely manageable with the time and information available to him. At one phase in the history of international studies in this country, in the 1920's and 1930's, the heavy emphasis given current events drained the discipline of its concern for research, analysis, and reflection—the routes to progress in social science. On the other hand, the scholar may as easily fall prey to the beguiling illusion that theory can be divorced from practice. This illusion seems evident in some of the research in the 1930's in which models of the ideal world community were erected and every action measured by its distance from the idealized picture.

Fortunately, today there are a host of practical and theoretical problems which bring the student of contem-

porary problems and the theorist more closely together, much as the medical practitioner and the biochemist have discovered they stand on common ground. The task of creating, maintaining, and preserving the alliance of the free world is ever before the policy-maker. At the same time, theorists seek to understand the factors that have led certain historic groupings to combine and subsequently dissolve their ties. It is noteworthy that in an era of total war we have witnessed in Korea, Indo-China, and Egypt conflicts of arms that underscore the possibility of limited war. Scholars may not yet have exhausted the contribution they can make to elaborating the nature, causes, and functions of limited war in Western society. Foreign policy in a democracy presents its peculiar problems of bipartisanship, secrecy vs. disclosure of information, and the frequently competitive roles of the executive and legislative branches of government. It is doubtful if anything short of basic research involving analysis and generalization can add much to an understanding of such problems. Comparative studies of the conduct of foreign policy, of the role of parliamentary parties in foreign policy, and of the role of the executive in say, India and Pakistan, illustrate this trend. Or to cite another example, practitioners are the first to call for a body of organized relevant theories of foreign policy. Today this goal claims a larger share of scholarly activity than ever before and while it would be premature to applaud accomplishments, there are signs that significant advances may be forthcoming. The following indicate the scope of this research: principles of American foreign policy; American interests in the Far East; political necessity and moral principle in foreign policy; power and commitments in foreign policy; armaments and strategy; power politics and peace strategy; morality and strategy; and the origins of political realism in the sixteenth century.

Finally, in the study of modern diplomacy, theory and

practice again need to go hand in hand. Scholars note the existence of a dozen or more classic treatises by Nicholson, Cambon, Jusserand, and others on traditional diplomacy but a surprising dearth of scientific works on the methods and techniques of modern diplomacy. The divorce of theory and practice is partly responsible for this lack. The elements of multilateral diplomacy, comprising as they do a blending of the old and the new, are an appropriate object of scientific study. Historians, political scientists, and diplomats might together examine the techniques and principles involved in the conduct of foreign policy through international parliamentary institutions. In so doing they might add a new dimension to international studies in a time of expanding need.

Intercultural Understanding

The word "understanding," according to Webster and his successors, can be taken to mean "amicability and harmony of sentiments," or "knowledge, discernment, comprehension," or the "intellectual power to form reasoned judgments." Having had an announced program in international and intercultural understanding for more than 20 years, The Rockefeller Foundation has received a great number and variety of proposals for projects concerning "better understanding," most of which have had substantial merit. In searching for the point at which its own funds could be most usefully applied, the Foundation elected to concentrate upon the second of the meanings quoted above, believing that knowledge is both the *sine qua non* of reasoned judgments about human affairs and the wellspring of genuine sympathy.

In concentrating on work leading to further knowledge, like that being done in the graduate centers of leading uni-

versities in this country and abroad, the Foundation does not underestimate the vital role which amicability must play as an antidote to selfishness, parochialism, and xenophobia, if men are to live at peace. Nor does its choice reflect any lack of appreciation and respect for the public service performed by large numbers of individuals and groups who are working devotedly in the cause of friendlier attitudes across national and cultural frontiers. These workers disseminate knowledge as their time, resources, and information allow, and help to create an atmosphere in which leaders can reach more rational decisions and think more soundly about the longer-range problems in the presence of many short-run aggravations and pressures.

Events and conditions in other parts of the world are entering ever more intimately into the daily lives of us all, regardless of our nation or culture. These growing relationships, whether cooperative or rival, call for more accurate and sensitive understanding of other cultures, more capacity to decode the shorthand symbols by which peoples often think of each other, more appreciation of the similarities so often cloaked by the obvious differences. One of the problems is that the genuine understanding of another culture requires full-time study of the type to which one must usually devote a whole career. Most of us cannot make a career of it, for there are many other things to be done. But if a society is to be healthy in the years ahead, it will need a considerable number of knowledgeable experts on cultures other than its own. Some of these experts will choose this field because the study and teaching of another culture can be as intellectually and spiritually satisfying as the study of, say, the stars, to be pursued for its own sake. Others will be needed in government, in international organizations, in our schools and colleges, and in the manifold phases of economic life. Their understanding, in turn, will aid in in-

forming and advising the rest of us, who will need their help in meeting the responsibilities of citizenship.

Currently Rockefeller Foundation grants in the general area of intercultural understanding fall into one or more of four categories. The first comprises studies of other cultures being conducted at selected institutions in the United States. The largest of the grants in this group in 1956 was one of \$205,000 for use over a six-year period by the Harvard University Center for Middle Eastern Studies under the leadership of Professor Sir Hamilton Gibb. Another, of \$140,000, will support interreligious studies by the Federated Theological Faculty of the University of Chicago over a three-year period. The Association for Asian Studies received \$67,500 toward the support of its program in Asian studies. The School of Law of Tulane University of Louisiana was granted \$114,000 over a period of five years for Latin American legal and social studies. In the Annual Report the sections on humanities and social sciences show a number of smaller grants of the same type, as is also true of the categories which follow.

A second group of grants supports American studies in institutions abroad. Foundation funds are directly aiding American studies in the United Kingdom, Germany, Turkey, and Japan, where relatively well-developed programs are in operation, and are indirectly helping in a number of other countries. During 1956 an additional \$30,000 was provided the University of Ankara to continue for two more years the appointment of visiting American professors. Although the amounts actually appropriated in this category may show considerable variation from year to year, the Foundation expects to continue the encouragement to American studies in other countries.

A third category is cross-cultural studies in which the United States is not involved. Examples are the grant of \$54,700 to the Oriental Library in Tokyo, Japan, for a

seminar on modern China and another of \$49,000 to the University of Durham, England, for studies in Middle Eastern geography. Substantial grants made in earlier years are currently supporting other projects in this classification.

A final category comprises studies of important cultural and political areas by scholars of the same cultural background. These are included here because, in many instances, the study of a culture by scholars from the outside may be handicapped by the lack of adequate materials. For a variety of reasons, some societies have not been articulate about themselves, even to themselves; such studies are an obviously needed contribution to wider understanding. The American University of Beirut, Lebanon, received \$216,000 for continued support of its Arab Studies Program; Deccan College, Poona, India, was allocated \$76,775 in further support of its postgraduate studies of Indian languages; the Institute for Contemporary History in Munich, Germany, was given \$26,000 toward a history of the National Socialist regime, on which little systematic work has been done in Germany itself.

The Arts

Since 1953 The Rockefeller Foundation has been exploring the possibilities of a limited, but hopefully useful, role in support of the creative arts. In thus venturing beyond the bounds of its earlier corporate experience, its opening moves have necessarily been somewhat tentative and experimental. Thus far the Foundation's grants for the arts have been concentrated largely in the United States, and not merely because the American scene is more familiar and closer to hand. There are many reasons for believing that the role of the arts in American society is changing, that the changes are potentially for the better, and that new

patterns of support for the arts may need to be pioneered in the United States.

Throughout much of human history the support of the fine arts has come from a small fraction of the population endowed by birth, wealth, or ecclesiastical position with the means to provide patronage. In a modern democracy, and particularly in the United States, shifts in income distribution and the fluidity of the class structure have considerably decreased the economic importance of the wealthy while increasing that of middle and lower income groups. Initially these events proved detrimental to the arts. The small groups traditionally interested in the arts have in many instances lost both the power and the means to give them inspiration and support. The larger groups which have gained in economic strength and which might be expected to take the place of the patrons of the past have not always had active artistic interests nor convenient methods for pooling individual small contributions.

The American democracy is one of rising standards of living, great total productivity, and, in almost all parts of the community, an ample surplus above the requirements of minimum subsistence. Economically, the people of the United States can provide greater support for the arts than they ever enjoyed before, given a desire to do so and appropriate methods. The extension of education, particularly at the high school and college level, has enlarged the potential audience for the arts by enabling increasing numbers of students to participate in improved school programs in art, music, drama, and dance.

There are other signs of artistic growth in the United States. Symphony orchestras now number more than 1,000; though most of them are nonprofessional, they nevertheless represent a wealth of community interest and individual talent. The number of drama groups is probably in the order of 100,000, and that of amateur painters well over a

million. Dance schools have multiplied throughout the country, and more and more opera workshops have been formed in colleges and universities. Sales of high fidelity recordings have grown enormously, undoubtedly representing an interest stimulated by many years of music broadcasting and greater attention to music in the schools.

Although there are many reasons to believe that the future of the arts in a modern democratic society is a bright one, the patterns of artistic activity—and particularly social and financial support of art—must keep pace with the larger economic and social changes if that future is to be realized. The serious economic difficulties which still confront the arts and artists arise largely from the facts that our aspirations steadily exceed our expanding capabilities and that we are evolving from outmoded and inadequate forms of organization and support to new and, it is hoped, better ones.

In considering its own role in the arts The Rockefeller Foundation must weigh many factors: it has many interests, and it must maintain the flexibility which has made possible its support of the arts despite preoccupation with other fields. Furthermore, the Foundation can allocate only a limited amount of money to the arts—an amount which would not be enough even to meet the annual deficits of America's major symphony orchestras. It would be unwise for the Foundation merely to underwrite deficits or to subsidize a level of activity which could not be maintained when it became necessary for the Foundation to turn elsewhere. To do so would be to provide the kind of palliative support which the Foundation has traditionally avoided—as opposed to remedial and generative support.

The Rockefeller Foundation prefers to assist the arts in establishing the new patterns of support which are now emerging. The Foundation might, for example, help the arts to establish or reestablish a functional role, as in religious drama, or it might aid an artistic group in expanding

its base of appeal and hence its support. The Foundation's intention is not to provide long-term or continuous support, but to offer the short-term or initial aid which will lead to a new or higher level of achievement that can be maintained by other sources of support.

Foundation activities in the arts have been based on the premise that their healthy development requires a sound balance between the preservation of artistic tradition and the development of new creative work. No artistic tradition can simply be preserved: when it ceases to grow it is already dead. The arts decline in quality and appeal unless inspired by the great art of the past, but they must also continue to burgeon. Whether innovation or the maintenance of tradition most needs help at a given time can be decided only by careful evaluation of the existing balance between these and other elements of sound artistic growth. The Foundation has attempted to assist the arts both to preserve tradition and to evolve toward new forms. Its first major grant in the arts in recent years was for the commissioning of new music by the Louisville Philharmonic Society (\$500,000); it also supported the contemporary revival of Shakespearean drama through support of the American Shakespeare Festival Theatre and Academy (\$300,000) and the Stratford Shakespearean Festival of Canada Foundation (\$42,000).

No dogmatic stand can be taken, either, concerning the relative merits of assistance to already established organizations in contrast to new ones. The two Stratford projects were new ventures for which there were few precedents. The Foundation has also made a number of grants to stabilize and strengthen existing artistic undertakings. One grant of \$200,000 aided the New York City Center of Music and Drama to commission new ballet and opera productions. Another of \$125,000 to the Boston Symphony Orchestra contributed toward the Tanglewood Revolving

Scholarship Fund. A third grant of \$33,400 to Connecticut College helped support the summer School and Festival of the Dance.

A number of grants have been directed toward the development of new or expanded markets for the arts. Foundation assistance (\$75,000) to Young Audiences, Inc., has enabled this organization to expand its program of high quality chamber music for the schools. School systems and voluntary organizations are gradually assuming the costs. The net results will be increased opportunities for our children—the audiences of the future—to hear good “live” music, and additional employment for our musicians. A grant of \$21,000 to the Little Symphony Society of Berkeley, California, assisted its efforts to strengthen its base of local support and to enlarge its audiences in neighboring communities. Grants to support school lending programs in San Francisco, Chicago, and Pittsburgh, and through the International Graphic Arts Society, were intended to develop a larger use and market for the plastic arts in the hope that this would also help to increase the financial resources of artists.

In general, The Rockefeller Foundation's program in the arts has taken into account traditional views on two points: first, that the American economy is such that governmental subsidy is not needed to support the arts; and, second, that because governmental subsidy might mean political control, to urge governmental aid as an over-all solution for the support of the arts would be, at the least, premature. The Foundation, however, has no fixed position on an issue which the public must resolve. If the circumstances were favorable, the Foundation might act in partnership with government, as it did in supporting the dramatic program of the Virginia Museum of Fine Arts. The Museum's theatre was financed partly by private donations and partly by state appropriations. A Rockefeller Foundation

grant of \$150,000 toward production costs during the theatre's first three years made possible the engagement of a small professional staff and the launching of a dramatic program. The Foundation anticipates that the professional staff, like the other museum staff members, will be maintained on the state budget if the dramatic program proves a success. The Virginia Museum program appeared to the Foundation to be a desirable experiment with a new pattern of state support and a new relationship between the arts of the past and living drama.

A 1956 grant of modest size has unusual potential significance. The Metropolitan Opera Association received \$50,000 for the use of the Exploratory Committee for a Musical Arts Center in New York City. This committee was subsequently reorganized and became the Lincoln Square Performing Arts Center, whose purpose is to explore the feasibility of a new center in which would be grouped the Metropolitan Opera, the Philharmonic-Symphony Society of New York, ballet, drama, and advanced training in the performing arts.

Creative writing is an important area of the arts but one which presents peculiar difficulties for Foundation action. In the long run, writers must rely on a wide public audience for their support; it is on the further development of the size and discrimination of this audience, and its willingness to buy books, that the future of professional writing in the United States depends. Our schools, libraries, and universities must play the crucial role in enlarging the audience for good writing.

Even in assisting some of the many would-be writers, a Foundation faces certain limitations. Fellowships, viewed against the total situation, are only a palliative, but they do assist in establishing promising writers who, confronted by the gap between rising publication costs and modest sales, might not be able to gain full self-support. The Foundation

has undertaken a limited fellowship program under the auspices of four leading American literary reviews, *The Kenyon Review*, *The Sewanee Review*, the *Partisan Review*, and *The Hudson Review*. This program, financed by grants totaling \$295,200, is decentralized to minimize the danger of supporting a single or a narrow literary point of view. The selection of the fellows rests with the editors of the literary reviews, who normally are in close contact with young writers.

The Foundation has no fixed definitions of the activities which can properly be considered elements of its program in the arts. Architecture, for example, might be thought to fall more properly within the fields of the social sciences or of technology than of the arts. If architecture is one of the arts—as it certainly is in part—it is the most prosperous and the least in need of outside financial support. This comment also applies to city planning, but here the relative neglect of aesthetic factors provides an appropriate area for Foundation action. The Foundation's only contributions to architecture under its arts program have been grants of \$85,000 to the Massachusetts Institute of Technology for work on the aesthetic aspects of city planning and of \$66,000 to the University of Pennsylvania for studies of the history of town and country development, and of current trends in landscape design.

Because of the many challenging opportunities in the United States for artistic development and experimentation with techniques, the Foundation has undertaken only a few projects in the arts abroad during the past few years. Its long-standing interest in literature, however, led to the award on an international basis of a limited number of fellowships for creative writing. These fellowships enabled a small number of writers from such countries as Japan, Iraq, Turkey, Indonesia, Ceylon, India, Pakistan, and the Philippine Islands to broaden their understanding of cultural develop-

ments and to meet writers in other countries. Out of the fellowships for writers have grown two projects in drama, one for the encouragement of the Arena Theatre of the Philippine Normal College in Manila, the other for the Indonesian National Theatre Academy Foundation in Djakarta. In addition, local fellowship programs in Canada and Mexico have been assisted.

It should be emphasized that the Foundation still regards its program in the arts as experimental. The Foundation wishes to discover how the arts can best grow in quality and achieve prosperity in a democratic society. Although the Foundation has tried a number of approaches, it in no way assumes that these can or should be repeated, or that other quite different ones should not be undertaken.

Projects and People

The comment has been made from time to time that foundations are interested in projects rather than individuals, and more interested in large projects than in small ones. As to size, The Rockefeller Foundation looks carefully at both the large proposals and the small ones; it makes grants of all sizes. One of the criteria by which it judges is that the resources are in keeping with what is needed to accomplish the purpose intended: some proposals appear to be excessively expensive and can be discussed only when revised in terms of lower costs; others are planned far too stringently but merit revision for larger amounts.

Close examination would show that the alleged distinction between projects and individuals is illusory. Certain types of studies can be handled only by a group of investigators working together, but most Rockefeller Foundation grants, whether to institutions or for designated individuals, contribute to the work of individual scientists and scholars.

Frequently funds given to an institution are precisely for the purpose of reallocation for the support of individuals selected by it. Without further elaboration, it might be of interest that our 1956 grants included support for approximately 975 individual scientists and scholars.

Other Matters of Foundation Interest

The President's Review is not intended to include in each issue a full discussion of every aspect of the Foundation's program. Usually a careful reading of the Annual Report will show grants which are not discussed in the Review. For example, the present Review does not comment specifically upon the Foundation's important interest in the population problem, which engages the attention of all its Directors and has the sympathetic interest of the Trustees. Similarly, this Review has not discussed the joint interests of the doctor, the biologist, and the sociologist in human behavior—a field in which the Foundation continues to make grants on a highly selective basis. A further section might have been added on the importance which the Foundation attaches to key universities, strategically placed to exercise a wide influence over an important region. This note is merely a reminder that those who are professionally interested in the activities of The Rockefeller Foundation might wish to consult the Annual Report and more than one issue of the President's Review.

"Out of Program" Projects

In the foregoing sections of this Review the major fields within which the Foundation makes grants have been described. The account would not be complete, however,

without a word about the occasional project which, though "out of program," is granted financial support, and about the types of applications for aid which are almost automatically declined.

The Trustees and officers of The Rockefeller Foundation believe that flexibility is a vital asset to a philanthropic fund and that program should not be so rigid as to exclude proposals of unusual significance in any field of science and scholarship. On occasion, therefore, the Trustees have made "out of program" grants to unique and highly promising projects which had little likelihood of support from other sources and which might result in basic and important contributions to knowledge. To say in advance what projects might receive such support is obviously impossible. The project must not only be unique—all proposals have unique features—it must also be too good or too important to be refused.

But to accomplish permanent results with limited resources, the Foundation must ordinarily concentrate its support on projects which fall within fields selected by the Trustees for special interest. A great many proposals, worthy in themselves, must therefore be declined. The Foundation does not engage in palliative philanthropy. Specifically, The Rockefeller Foundation:

- does not give or lend money for personal aid to individuals;
- does not invest in securities on a philanthropic rather than a business basis;
- does not appraise or subsidize cures or inventions;
- does not finance altruistic movements involving private profit;
- does not support propaganda;
- does not support campaigns to elect political candidates or to influence legislation;
- does not contribute to the establishment, building, or operation of local hospitals, churches, schools, libraries, or welfare agencies.

No special form is required in making requests for Foundation aid. Applications should be addressed to the Secretary, or to the director for the program in which the proposal would seem to fall. They should contain a brief description of the project, show the special qualifications of the person or persons who would undertake to carry it out, and the responsibility of the institution or agency sponsoring it. Ordinarily such applications come from the institution concerned rather than from individuals.

Organizational Information

MEETINGS

During 1956 regular meetings of the full Board of Trustees were held on April 4 and on December 4 and 5. Six regular meetings of the Executive Committee of the Trustees were held to take actions within the general policies approved by the Board, and a seventh special meeting was held on December 28, 1956.

BOARD OF TRUSTEES

The Board of Trustees of The Rockefeller Foundation elected one new member at their meeting on April 4, 1956. Dr. Lee A. DuBridge, President of the California Institute of Technology, was elected to succeed Mr. Geoffrey S. Smith who resigned from the Board on October 21, 1955. Dr. Robert G. Sproul, President of the University of California, also a member of the Board of Trustees, retired on June 30, 1956.

On April 3, 1957, the Board of Trustees elected Mr. Benjamin M. McKelway and Dr. Richard Bradfield¹ to

¹ Beginning July 1, 1957.

membership. Mr. McKelway, a director of the Associated Press and a trustee of George Washington University, is editor of the *Evening Star*, Washington, D.C. Dr. Bradfield, professor and until recently head of the Department of Agronomy at Cornell University, served previously with the Foundation as a member of the Board of Consultants for Agriculture and as Regional Director for Agriculture in the Far East.

OFFICERS AND STAFF

Dr. Alan Gregg, Vice-President of the Foundation, retired on June 30, 1956. Dr. Gregg was singled out in 1956 for unusual recognition by the American Public Health Association which chose him for a Special Albert Lasker Award "in recognition of the unique role he has played in the field of public health and of medical education and research in this country and throughout the world."

Three officers for Medical Education and Public Health retired during the summer of 1956: Dr. Rolla B. Hill, Assistant Director, on July 31; Dr. John B. Grant and Dr. Wade W. Oliver, both Associate Directors, on June 30. Dr. Grant is continuing a special assignment as a member of the Foundation field staff on loan to the University of Puerto Rico.

Several new appointments were made for the various programs. These were: Dr. Marshall C. Balfour, formerly Assistant Director, as Associate Director for Medical Education and Public Health; Dr. Osler L. Peterson, formerly field staff member in North Carolina, as Assistant Director for Medical Education and Public Health; Miss Virginia Arnold, Assistant Director for Medical Education and Public Health; Dr. Richmond K. Anderson, formerly field staff member for Medical Education and Public Health in India, as Assistant Director for Biological and Medical

Research; Dr. Albert H. Moseman, Associate Director for Agriculture; Dr. Montague Yudelman, Assistant Director for Social Sciences; Dr. Erskine W. McKinley, Consultant for Social Sciences; Mr. Chadbourne Gilpatric, formerly Assistant Director, as Associate Director for Humanities; and Dr. John P. Harrison, Assistant Director for Humanities.

Mr. Rowe S. Steel was appointed Assistant Comptroller effective October 1, 1956. He succeeds Mr. George E. Van Dyke, who is now a staff member on loan to Robert College, Istanbul, Turkey.

The following changes and appointments of field staff were made during 1956: Dr. LeRoy R. Allen, field staff member for Medical Education and Public Health, effective January 1, 1957; Dr. Ping-yao Cheng, staff member for Biological and Medical Research with duties at the Foundation Virus Laboratories in New York; Dr. Leo A. Thomas, temporary staff member for Biological and Medical Research, to September 30, 1957; Dr. Harold Trapido, Biological and Medical Research staff, assigned to the Virus Research Centre in Poona, India; Mr. Fred W. Knipe, staff member for Medical Education and Public Health, reassigned to the Malaria Institute of India; Dr. J. Austin Kerr, staff member for Biological and Medical Research, assigned to the Pan American Sanitary Bureau; and Dr. Ulysses J. Grant, field staff member for the Colombian Agricultural Program, assigned to India beginning January 1, 1957.

Several new staff members joined the program in Agriculture in 1956. They were: Dr. Donald K. Freebairn, as Assistant Agricultural Economist in Mexico; Mr. Roland E. Harwood, as Experiment Station Operations Assistant in Colombia; Dr. William H. Hatheway, as staff member in training assigned to the Agricultural Field Staff as Assistant Biometrician; and Dr. David H. Timothy, as Assistant Geneticist in Colombia.

Dr. Joseph Melnick, who had been stationed for three months at the Poona Virus Research Centre as a temporary staff member, returned to his post at Yale University at the end of March, 1956. Dr. Oliver R. McCoy resigned from the Medical Education and Public Health staff on March 31, 1956. Dr. H. David Thurston resigned from the field staff of the agricultural program in June, 1956.

With deep regret we report the death on June 17, 1956, of Mr. Vanderbilt Webb, Counsel to the Foundation. Mr. Webb had been first appointed Associate Counsel to the Foundation in 1942 and in 1948 became Counsel to the Foundation and to the General Education Board.

On November 17, 1956, a plane crash in Colombia resulted in the death of Dr. Ashley W. Oughterson, field staff member for Medical Education and Public Health. Dr. Oughterson, who retired as Clinical Professor of Surgery at Yale University Medical School to join the Foundation staff, had only recently been assigned to Cali, Colombia, to assist the University of Valle Faculty of Medicine in the development of its program in medical education. His death is a tragic loss to the Foundation and to medical education.

Summary of Appropriations Account

FUNDS AVAILABLE

Balance from 1955	\$6,506,430
Income for 1956	22,369,496
Amount transferred from Principal Fund as of December 31, 1956	4,000,000
Unused balances of appropriations allowed to lapse and refunds on prior year grants	740,904
	<u>\$33,616,830</u>

FUNDS APPROPRIATED

Appropriations	
Medical Education and Public Health	\$4,730,305
Biological and Medical Research	5,012,200
Agriculture	4,969,100
Social Sciences	3,247,760
Humanities	5,963,605
General	2,184,000
Administration	3,968,335
	<u>\$30,075,305</u>
Less appropriation for which funds were previously authorized	1,500,000
	<u>\$28,575,305</u>
Authorization for later appropriation by the Executive Committee	176,009
	<u>\$28,751,314</u>
Balance available for appropriation in 1957	4,865,516
	<u>\$33,616,830</u>

Principal Fund

Book value, December 31, 1955	\$162,800,434
Additions during year	3,625,860
	<u>\$166,426,294</u>
Less amount transferred to Income Account	4,000,000
	<u>\$162,426,294</u>
Book value, December 31, 1956 (Market value, \$608,287,631)	

Appropriations Made in 1956

(Projects involving more than one program interest are classified according to major field.)

Medical Education and Public Health

PROFESSIONAL EDUCATION

University of the Andes, Bogotá, Colombia: development of a school of premedical studies; \$570,000;

Christian Medical College, Vellore, India: development of the medical education program; 1,685,600 rupees (about \$367,400);

University of Lucknow, India: development of the medical education program of King George's Medical College; 1,375,000 rupees and \$10,000 (about \$309,750);

Keio University, Tokyo, Japan: construction of a building for the Departments of Pathology, Bacteriology, and Forensic Medicine of the School of Medicine; 100,000,000 yen (about \$290,000);

Seth Gordhandas Sunderdas Medical College, Bombay, India: development of the medical education program; 350,000 rupees and \$197,000 (about \$273,300);

Massachusetts Institute of Technology, Cambridge: to provide a biological and medical facility for the nuclear reactor now under construction; \$250,000;

University of Recife, Brazil: development of the Faculty of Medicine; 5,223,800 cruzeiros and \$126,000 (about \$215,000);

Paulista School of Medicine, São Paulo, Brazil: development of the medical education program; \$105,000;

University of Ankara, Turkey: development of the Department of Child Health of the Faculty of Medicine; \$100,000;

Union University, Albany, New York: an experimental radio program of regional postgraduate education by the Albany Medical College; \$90,000;

University of Brazil, Rio de Janeiro: development of the teaching and research programs of the Institute of Microbiology; \$63,000;

University of Antioquia, Medellín, Colombia: development of a school of library science; \$58,000;

Boston University, Massachusetts: a study of the curriculum for the School of Medicine and the College of Liberal Arts; \$50,000;

University of Rio Grande do Sul, Pôrto Alegre, Brazil: development by the Faculty of Medicine of teaching and research in anatomy and physiology; \$36,000;

Christian Medical College, Ludhiana, India: development of teaching and research in the Department of Preventive Medicine; \$30,000;

New York University—Bellevue Medical Center, New York: Institute of Physical Medicine and Rehabilitation; training of a group of rehabilitation personnel for the Burmese government; \$30,000;

Unitarian Service Committee, Inc., Boston, Massachusetts: to send American consultants to Japan to aid in the development of teaching in anesthesiology in Japanese medical schools; \$18,000;

University of San Marcos, Lima, Peru: a survey by the Faculty of Medicine of its facilities and curriculum and of current medical education in Latin America, the United States, and Europe; 120,000 Peruvian soles and \$6,000 (about \$12,000);

Malaria Institute of India, Delhi: equipment and supplies for use in the development of teaching materials; \$6,000;

MEDICAL CARE

Department of Health, Government of Puerto Rico, San Juan: development of techniques and methods for the regionalization of medical and public health facilities in the Bayamón Region; \$155,950;

GENERAL

Harvard University, Cambridge, Massachusetts: a field study of population problems in India; \$163,280;

Nagoya National University, Japan: an interdisciplinary research project on the relationship between Japanese cultural patterns and personality; \$60,000;

FIELD SERVICE

For the support of medical education and public health field services abroad; two grants totaling \$377,625;

FELLOWSHIPS

For fellowships, scholarships, and training awards in medical education and public health; \$650,000;

GRANTS IN AID

For grants in aid in medical education and public health; \$450,000.

Biological and Medical Research

THE BIOLOGICAL BASIS OF BEHAVIOR

Indian Council of Medical Research, Delhi: research in neurology at the Indian Cancer Research Centre, Bombay; \$88,200;

Child Research Council of Denver, Colorado: studies in child growth and development; \$85,000;

Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine: studies of the genetic factors of intelligence and emotional variation in mammals; \$50,000;

University of Cambridge, England: research in the Psychological Laboratory; £15,000 (about \$43,500);

Harvard University, Cambridge, Massachusetts: research on the biochemistry of vision; \$25,000;

Karolinska Institute, Stockholm, Sweden: research in physiology; 109,000 Swedish crowns (about \$22,000);

University of Oslo, Norway: research in experimental biology in the Institute of Zoophysiology; \$15,000;

University of Copenhagen, Denmark: research in physiology in the Institute of Neurophysiology; \$14,000;

University of Bern, Switzerland: facilities for research on plant physiology in the Institute of Botany; 52,000 Swiss francs (about \$12,500);

University of Chicago, Illinois: research in experimental ecology; \$10,500;

Nagoya National University, Japan: research in the Biological Institute; \$4,000;

GENERAL BIOLOGY

Indiana University, Bloomington: research in genetics; \$350,000;

University of Copenhagen, Denmark: research equipment for use in the Institutes of Biology and of Experimental Medicine and Surgery; \$260,000;

National University of Mexico, Mexico City: research expenses in a number of the science institutes; \$176,000;

Amherst College, Massachusetts: research in biology; \$100,000;

Johns Hopkins University, Baltimore, Maryland: research in genetics, cytology, and evolution; \$100,000;

Zoological Station of Naples, Italy: construction of a new library building; 50,000,000 Italian lire (about \$85,000);

National Center for Scientific Research, Paris, France: research in physiological genetics at the Laboratory of Physiological Genetics; \$61,000;

State Institute for Human Genetics, Uppsala, Sweden: research in human genetics; \$50,000;

Ministry of Public Health, Montevideo, Uruguay: local training fellowships at the Research Institute of Biological Sciences; 126,000 Uruguayan pesos (about \$39,000);

University of Wisconsin, Madison: development in the Medical School of a program in medical genetics; \$25,000;

University of London, England: research in human biochemical genetics at the London Hospital Medical College; £8,250 (about \$24,000);

University of São Paulo, Brazil: research in *Drosophila* population genetics; \$21,000;

University of Chile, Santiago: research in experimental cytology and genetics at the Juan Noe Institute of Biology of the School of Medicine; \$20,000;

State University of Iowa, Iowa City: research in genetics; \$16,000;

University of Geneva, Switzerland: research in human genetics; 42,000 Swiss francs (about \$10,000);

BIOCHEMISTRY

Carlsberg Foundation, Copenhagen, Denmark: research in biochemistry at the Carlsberg Laboratory; 411,000 Danish crowns and \$30,000 (about \$90,000);

University of Cambridge, England: research on biologically important molecules; £30,000 (about \$87,000);

McGill University, Montreal, Canada: research in biochemistry; C\$55,000 (about \$56,650);

University of Oxford, England: research on the chemistry of biologically important compounds; £8,600 and \$20,000 (about \$45,000);

University of Ferrara, Italy: research in biochemistry; \$40,000;

University of Rome, Italy: research in biochemistry; 5,000,000 Italian lire and \$21,500 (about \$30,000);

University of Aix-Marseilles, France: research in biochemistry at the Institute of Biological Chemistry; \$25,000;

University of Paris, France: research in biochemistry at the Laboratory of Biological Chemistry; \$25,000;

Johns Hopkins University, Baltimore, Maryland: research in protein biochemistry; \$6,000;

BIOPHYSICS

University of Colorado, Boulder: research in biophysics in the School of Medicine; \$85,000;

University of Helsinki, Finland: research in biophysics and cytochemistry at the Institute of Forensic Medicine; \$19,500;

University of Graz, Austria: research on the structure of proteins and fats at the Institute for Theoretical and Physical Chemistry; \$15,000;

University of Utrecht, Netherlands: research in plant physiology by the Biophysical Research Group of the Laboratory of Physics; \$12,000;

University of Chile, Santiago: research in biophysics in the Department of Medical Physics of the School of Medicine; \$10,000;

VIROLOGY

Washington University, St. Louis, Missouri: research in plant physiology and plant biochemistry; \$165,000;

University of Malaya, Singapore: research in virology in the Department of Bacteriology; 191,580 Malayan dollars and \$10,000 (about \$73,800);

Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia: research in virology; \$60,000;

Cornell University, Ithaca, New York: research in virology in the Department of Public Health and Preventive Medicine of the Medical College, New York; \$48,000;

University of Perugia, Italy: research on plant viruses in the Institute of Plant Pathology of the Faculty of Agronomy; \$15,000;

Virus Research Program: two grants totaling \$848,250;

SPECIAL PROJECTS

National Academy of Sciences, Washington, D.C.: a study of the effects of atomic radiation on living organisms; \$250,000;

National Research Council, Washington, D.C.: research on protein-rich foods for the improvement of the nutrition of the peoples of food-deficient countries; \$250,000;

University of Chicago, Illinois: advanced training in applied statistics; \$50,000;

Cornell University, Ithaca, New York: support of a statistical research group in the Department of Public Health and Preventive Medicine of the Medical College, New York; \$50,000;

University of London, England: research on proteins and the biological value of tropical foodstuffs at the London School of Hygiene and Tropical Medicine; £17,000 (about \$49,300);

FELLOWSHIPS

For fellowships, scholarships, and training awards in biological and medical research; \$400,000;

GRANTS IN AID

For grants in aid in biological and medical research; \$500,000.

Agriculture

AID TO RESEARCH AND TEACHING

University of Chile, Santiago: development of the College of Agriculture, an agricultural experiment station, and the Faculty of Veterinary Medicine; \$300,000;

University of the Philippines, Quezon City: construction of dormitory facilities at the College of Agriculture, Los Baños; \$250,000;

Rural University of the State of Minas Gerais, Belo Horizonte: development of the School of Agriculture and agricultural experiment station at Viçosa; \$200,000;

California Institute of Technology, Pasadena: research on chemical climatology at the Earhart Plant Research Laboratory; \$111,900;

Boyce Thompson Institute for Plant Research, Inc., Yonkers, New York: studies of the mechanisms of fungicide action; \$105,000;

National School of Agriculture, La Molina, Lima, Peru: support of postgraduate education and research; \$87,000;

Balwant Rajput College, Agra, India: development of agricultural education; \$80,000;

University of Rio Grande do Sul, Pôrto Alegre, Brazil: research on forage crops improvement; \$75,000;

Catholic University of Chile, Santiago: support of the agricultural program; \$68,000;

University of Minnesota, St. Paul: research on wheat and its pathogens in the Departments of Plant Pathology and Botany and of Plant Genetics and Agronomy; \$60,000;

Inter-American Institute of Agricultural Sciences, Turrialba, Costa Rica: graduate studies in animal husbandry; \$58,500;

University of Costa Rica, San José: development of teaching and research in agriculture; \$50,000;

Kasetsart University, Bangkok, Thailand: development of teaching and research in agriculture; \$50,000;

Kansas State College, Manhattan: study of basic biochemical and physiological processes occurring in stored grain; \$36,000;

Iowa State College, Ames: research in nematology in the Department of Zoology and Entomology; \$24,000;

Biochemical Institute of the Foundation for Chemical Research, Helsinki, Finland: research on anti-fungal factors; \$20,000;

Purdue University, Lafayette, Indiana: Purdue Research Foundation; study of senescence in plants; \$18,000;

West Virginia University, Morgantown: research on the physiology of fungi in the Departments of Plant Pathology and Biochemistry; \$18,000;

University of Florida, Gainesville: expansion of the Latin American student counseling service in agriculture; \$15,000;

Ministry of Agriculture, Rio de Janeiro, Brazil: research on soils, genetics, and irrigation at the National Service of Agronomic Research; \$15,000;

Virginia Polytechnic Institute, Blacksburg: development of a research program in veterinary physiology and animal nutrition; \$15,000;

National University of Mexico, Mexico City: research in the School of Veterinary Medicine; \$14,000;

Rowett Research Institute, Aberdeen, Scotland: research on animal nutrition; £4,900 (about \$14,000);

Biology Institute of Bahia, Salvador, Brazil: research on animal viruses; \$12,500;

Ohio State University, Columbus: research on the process of translocation in plants in the Department of Botany and Plant Pathology; \$12,100;

Allahabad Agricultural Institute, India: support of the agricultural research program; \$10,000;

Secretariat of Agriculture, State of São Paulo, Campinas, Brazil: research on plant viruses at the Institute of Agronomy; \$2,000;

SPECIAL PROJECTS

Harvard University, Cambridge, Massachusetts: a seminar on water resources in the Graduate School of Public Administration; \$153,600;

Commonwealth of Puerto Rico, San Juan: a survey of the organization and administration of insular agricultural agencies; \$85,000;

University of Aberdeen, Scotland: construction of a building for the Institute of Statistics; £10,000 (about \$29,000);

Publication of *The Agricultural Program of The Rockefeller Foundation*; \$15,000;

OPERATING PROGRAMS

For agricultural operating programs in Chile, Colombia, Mexico, and India; four grants totaling \$1,615,500, including \$150,000 for Latin American Scholarships to Rockefeller Foundation Agricultural Operating Activities and \$46,350 for the Central American Corn Improvement Project;

FELLOWSHIPS

For fellowships, scholarships, and training awards in agriculture; \$800,000;

GRANTS IN AID

For grants in aid in agriculture; \$550,000.

The Social Sciences

THE SOCIAL SCIENCES AS SCIENTIFIC DISCIPLINES

Massachusetts Institute of Technology, Cambridge: exploration of the uses of computers in the solution of theoretical and applied problems in the social sciences; \$98,400;

University of Chicago, Illinois: study of consumption and income distribution; \$45,400;

Miami University, Oxford, Ohio: research on fertility trends and future population growth in the United States at the Scripps Foundation for Research in Population Problems; \$40,000;

Yale University, New Haven, Connecticut: research on short-term economic forecasting at the Cowles Foundation for Research in Economics; \$34,000;

Institute for Economic Research, Munich, Germany: research in economics; 100,000 German marks (about \$24,500);

THE QUEST FOR ECONOMIC DEVELOPMENT

Vanderbilt University, Nashville, Tennessee: research in agricultural economics, in the organization of industry, and in social sciences other than economics at the Institute for Research and Training in the Social Sciences; \$150,000;

Tulane University of Louisiana, New Orleans: a program in Latin American legal and social studies; \$114,000;

National Planning Association, Washington, D.C.: study of the economics of competitive coexistence; \$109,250;

Stanford University, Palo Alto, California: research internships in international agricultural economics at the Food Research Institute; \$96,000;

International Bank for Reconstruction and Development, Washington, D.C.: support of the Economic Development Institute; \$50,000;

University of Durham, England: research and training in Middle Eastern economic and cultural geography; £16,925 (about \$49,000);

Center of Latin American Monetary Studies, Mexico City, Mexico: an annual survey of monetary developments in Latin America; \$36,300;

University of Istanbul, Turkey: preparation of an economic and social history of the Ottoman Empire; \$30,000;

Dutch Economic Institute, Rotterdam, Netherlands: research on basic problems of underdeveloped areas and training for technical assistance programs in the Department of Balanced International Growth; 111,000 Dutch florins (about \$29,400);

Supreme Court of Japan, Tokyo: library development; \$19,000;

American Friends Service Committee, Philadelphia, Pennsylvania: an analytical survey of two projects in economic and social development in southern Italy; \$12,300;

University of London, England: development of work in Latin American geography in the Department of Geography of the University College; £4,000 (about \$11,600);

Rescinded appropriation: \$51,210;

SOCIAL SCIENCE PROBLEMS OF CONTEMPORARY WESTERN SOCIETY

Royal Institute of International Affairs, London, England: research on underdeveloped areas, on economic and political development, and on contemporary international relations; £50,000 (about \$145,000);

Harvard University, Cambridge, Massachusetts: research on profits and the functioning of the economy, in the Graduate School of Business Administration; \$120,000;

Foreign Policy Association, New York: grants to enable younger teachers in the field to study international relations in New York; \$60,000;

National Bureau of Economic Research, New York: completion of a study of Soviet economic growth; \$60,000;

Princeton University, New Jersey: research in international relations at the Center of International Studies; \$40,000;

Geneva Graduate Institute of International Studies, Switzerland: training and research in international politics; \$30,000;

Columbia University, New York: research on fundamental problems of international organization in the School of International Affairs; \$30,000;

German Society for International Relations, Frankfurt: publication of a *Yearbook of World Politics* by the Institute for European Politics and Economics; 80,000 German marks (about \$19,400);

LEGAL AND POLITICAL PHILOSOPHY

American Law Institute, Philadelphia, Pennsylvania: completion of a model criminal code with commentaries; \$200,000;

University of California, Berkeley:

Research in political theory and the theoretical aspects of international relations; \$200,000;

A study of Marxism and the Far Eastern intellectual; \$18,000;

Columbia University, New York: research in political theory and the theoretical aspects of international relations; \$75,000;

Harvard University, Cambridge, Massachusetts: research on the inter-relations of political theory and institutions; \$50,000;

FELLOWSHIPS

For fellowships, scholarships, and training awards in the social sciences; \$550,000;

GRANTS IN AID

For grants in aid in the social sciences; \$650,000.

The Humanities

INTERCULTURAL STUDIES

American University of Beirut, Lebanon: support of the Arab Studies Program; \$216,000;

Harvard University, Cambridge, Massachusetts:

Postdoctoral research fellowships in Middle Eastern studies; \$205,000;

Toward the expenses of two visiting Japanese scholars in the field of comparative religion; \$13,500;

University of Chicago, Illinois: a program of interreligious studies in the Federated Theological Faculty; \$140,000;

Deccan College, Poona, India: studies of the principal languages of India in the Postgraduate and Research Institute; 229,800 rupees and \$76,775 (about \$126,775);

Association for Asian Studies, Inc., Ann Arbor, Michigan:

Studies of Chinese thought; \$57,400;

Conferences and planning activities of the Committee on South Asia; \$10,100;

Toyo Bunko (Oriental Library), Tokyo, Japan: a seminar on modern China; 9,277,200 yen and \$26,865 (about \$54,700);

Modern Language Association of America, New York: preparation of materials for teaching modern languages at the college level; \$40,500;

University of Ankara, Turkey: appointment to the Faculty of Letters of visiting professors of American literature and American history; \$30,000;

International Institute for the Study of Religions in Japan, Tokyo: support of its general program; \$12,000;

Tokyo University, Japan: expenses and fellowships in connection with the joint Tokyo University—Stanford University summer seminars on American studies; \$7,000;

HUMANISTIC RESEARCH

University of Chicago, Illinois: preparation for publication of the papers of James Madison; \$150,000;

American Historical Association, Washington, D.C.: preparation of a new edition of the *Guide to Historical Literature*; \$75,000;

Institute for Contemporary History, Munich, Germany: research on recent German history; 105,600 German marks (about \$26,000);

Stanford University, Palo Alto, California: study of philosophical developments in Asia and Western Europe by Professor John D. Goheen; \$14,000;

Kyushu University, Fukuoka, Japan: research on Chinese thought from the Sung to the Ming dynasties; 3,600,000 yen (about \$10,800);

Pan American Institute of Geography and History, Mexico City, Mexico: research on a history of the Americas under the auspices of the Commission on History; \$6,400;

University of Hawaii, Honolulu: publication of the quarterly, *Philosophy East and West*; \$4,000;

THE ARTS

American Symphony Orchestra League, Inc., Charleston, West Virginia: workshops for conductors and music critics; \$109,700;

American Shakespeare Festival Theatre and Academy, Inc., Stratford, Connecticut: general support; \$100,000;

University of Pennsylvania, Philadelphia: studies by the School of Fine Arts of the history of town and country development and of current trends in landscape design; \$66,000;

Foundation for Cultural Projects, Inc., New York: fellowships in creative writing and criticism to be awarded by the editors of the *Partisan Review*; \$52,200;

The Hudson Review, Inc., New York: fellowships in creative writing and criticism to be awarded by the editors of *The Hudson Review*; \$52,200;

Metropolitan Opera Association, Inc., New York: support of the Exploratory Committee for a Musical Arts Center in New York City; \$50,000;

Pratt Institute, Brooklyn, New York:

Establishment and support of a Graphic Arts Center; \$50,000;

Preparation of a preliminary study of the relationship of art and government in twentieth-century democratic society; \$2,200;

Canada Foundation, Ottawa: fellowships in creative writing and criticism; C\$48,300 (about \$49,750);

New York Public Library, New York: organization of its collection on the dance; \$37,560;

American Federation of Arts, New York: to hold a third international art film festival; \$25,000;

Philippine Normal College, Manila: development of the drama program; 17,250 Philippine pesos and \$11,950 (about \$20,700);

Japan Society, Inc., New York: to invite three Japanese print artists to the United States; \$16,000;

Art Society of Korea, Inc., Seoul: to encourage contemporary work in the arts; \$15,120;

San Francisco State College, California: development of the Poetry Center; \$11,500;

SPECIAL PROJECTS

American Library Association, Chicago, Illinois: establishment and support of an office of overseas library development; \$111,600;

Keio University, Tokyo, Japan: support of the Japan Library School; \$60,000;

Stanford University, Palo Alto, California: a seminar for business managers of privately founded Japanese universities; \$60,000;

Korean Language Society, Seoul: publication of a six-volume dictionary of the Korean language; \$36,400;

International Youth Library, Munich, Germany: a special program for the development of literature and libraries for children in Asia, Africa, and Latin America; \$35,500;

University of Colorado, Boulder: support of the honors program of the College of Arts and Sciences; \$28,000;

Funds appropriated but not yet formally released: \$2,500,000;

FELLOWSHIPS

For fellowships, scholarships, and training awards in the humanities; \$565,000;

GRANTS IN AID

For grants in aid in the humanities; \$710,000.

Other Appropriations

Rockefeller Foundation Hungarian Refugee Relief Program; \$1,200,000;

Robert College, Istanbul, Turkey: training of Turkish personnel for the faculties of Robert College and of the American College for Girls, Istanbul; \$350,000;

Institute of International Education, New York: support of the international student exchange program; \$250,000;

Personnel seconded to other organizations; \$114,000;

New York University, New York: a national survey, to be conducted by the University of Michigan Survey Research Center under the auspices of New York University and the National Association of Science Writers, of public attitudes toward the reporting of science news; \$70,000;

Fellowships, not specifically allocated as to field; \$100,000;

Grants in aid, not specifically allocated as to field; \$100,000.

Illustrations



The Computation Center at the Massachusetts Institute of Technology has recently acquired a digital computer of the most advanced type, Whirlwind I. Shown here is the magnetic core memory, which has a storage capacity of 8,192 words, each word containing 36 binary digits. A Foundation grant will enable the Center to explore the computer's potential uses in the solution of problems in the social sciences.



The Institute of Microbiology of the University of Brazil is organized into four technical divisions—virology, immunology, and medical and general microbiology—within each of which are laboratory units concerned with both teaching and research. *Above*, inoculating mice with Cocksackie virus in the Laboratory of Neurotropic Viruses. *Right*, determining microbiologic dosages of vitamins in the Laboratory of Microbial Physiology.





Harry Redl



Steve Crouch

Part of the orchestra, made up of musicians from 8 states and 36 symphony orchestras, that was gathered for the 1956 Conductors Workshop of the American Symphony Orchestra League.

The principal activity sponsored by the Poetry Center of San Francisco State College is the public reading of their own work by nationally known poets. *Left*, guest poet Robert Lowell reading and commenting on his poems to a Center audience.

Foundation awards in aid of Hungarian refugees both in this country and in Austria included, among others: support for the Hungarian Orchestra in Austria; interim maintenance grants for performing artists, administered through the American National Theatre and Academy; and a contribution to the project at Bard and St. Michael's Colleges, which provided intensive English language training for refugee students.





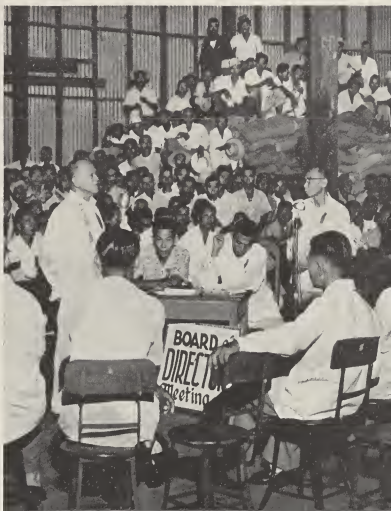
Left to right, Michael Hontvary, Sandor Szabo, Aladar Majorossy, ANTA project director Miriam de Kika, and Susanna Czerhat (Mrs. Hontvary).





The Arena Theatre of the Philippine Normal College specializes in the production of Philippine plays, presenting them both at the college and in the provinces. *Above*, a scene from *Seven Years* by Fidel Sicam, staged in the quadrangle of the college.

The theatre also participates in community development programs. *Above right*, farmers listen to a discussion of marketing problems by agricultural and educational officers; *below*, after being taught methods of dramatizing the discussion, they act out an improvised drama at a farm rally.

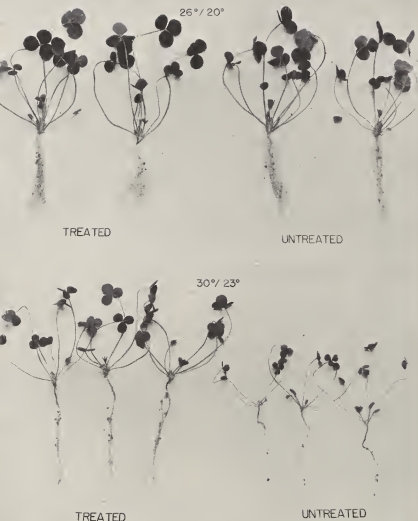


In the recently combined departments of physiology and cytochemistry at the Carlsberg Laboratory, Copenhagen, researches have been broadened to include studies of the biochemistry of the yeast cell; these should contribute valuable information on the way that enzymes function in the formation of specific proteins and on the broader problems of energy build-up and release in cells and tissues. Here, the operator is using a micromanipulator to isolate yeast spores.





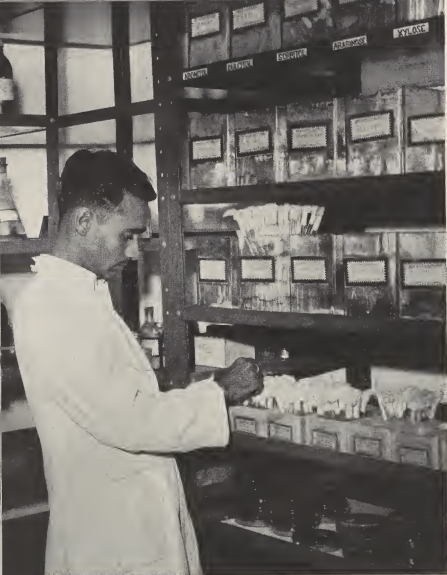
In their studies of population genetics, the Department of General Biology at the University of São Paulo is at present concerned with analyzing the nature of the adaptations that occur when the genetic equilibrium of isolated *Drosophila* populations is disturbed by the introduction of flies carrying identifiable mutant genes. In this picture, investigators are testing the method of marking the alien flies (with histological dye mixed with wheat flour).



The Earhart Plant Research Laboratory of the California Institute of Technology has undertaken a long-term program of research on the chemical mechanisms by which unfavorable climate limits plant growth. In the experiment shown here, a strain of subterranean clover was grown under two sets of temperature conditions: one near optimum (26°C . day, 20°C . night) and the other sufficiently high to cause heat damage. The treated plants in both groups were given periodic applications of an amino acid mixture, which partially restored the growth of the heat-damaged plants but had no effect on the plants grown at optimum temperature.

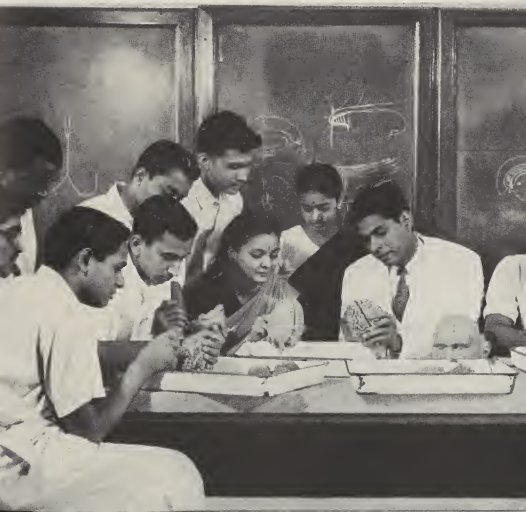
The Allahabad Agricultural Institute in India is dedicated to the improvement of rural living through education and research. Each of its 44 current projects is designed to produce answers to problems facing the Indian farmer. In the picture, a staff member has taken the hen from the trap nest and is recording its leg band number for a study of the effects of medium- and high-protein diets on growth and egg production.





The cold storage room (shown above) at King George's Medical College, Lucknow, was built from funds provided by the Foundation in 1954. This year the college received an appropriation of over \$300,000 in support of a plan for incorporating an internship-residency program in its medical education curriculum.

Current Foundation grants to Seth Gordhandas Sunderdas Medical College in Bombay will assist this college, one of the leading medical institutions in India, in the establishment of full-time clinical Departments of Medicine and Surgery, and will also aid in the development of Departments of Biochemistry and Pharmacology. The picture shows anatomy students with the preceptor in the dissection room.







Christian Medical College, Vellore, India, has achieved outstanding status for its medical teaching and service. Foundation appropriations in 1956 will be used by the college for (1) a program of staff development and the setting up of a fund for research in preclinical and clinical fields, and (2) the constructing and equipping of an outpatient teaching building. *Left to right*, sorting mosquitoes after a field trip; post-graduate thoracic trainees reading X-rays; medical students preparing for a village clinic.





The Japan Library School at Keio University, Tokyo, was established in 1951 and is a national rather than a university service. With the help of a further grant from the Foundation, available over the next five years, the school will be able to award one scholarship annually to a library instructor or librarian for study in the United States, and to bring an American teacher to Japan for approximately three months of each year. The grant will be used, in addition, for library workshops, fellowships, and the purchase of foreign books.

The University of Antioquia, at Medellín, Colombia, has recently enlarged its curriculum to include a training program in library science. It is anticipated that the two-year course will attract from 40 to 50 students annually. In this picture, students and an instructor examine books presented by the Library of Congress.





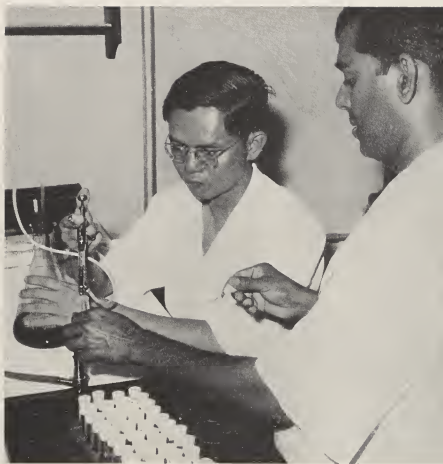
For a number of years the Roscoe B. Jackson Memorial Laboratory has been conducting research on the genetic factors of intelligence and emotional variation in five breeds of dogs. In this picture, Dr. John Fuller is measuring the emotional response of a basenji dog by electroencephalograph, using heart rate, breathing rate, and muscle tension.

Since its establishment in 1949, the International Youth Library in Munich has become one of the finest centers for children's literature in the world. With Foundation aid, the library's program is being expanded to include informational and consultative services for children's librarians in Asia, Africa, and Latin America.

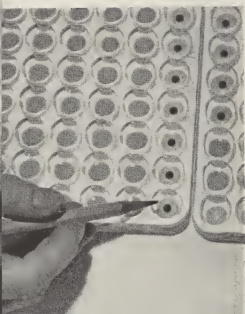


Below, taking a blood specimen during a field trip in North Borneo. Right, putting tissue culture fluid into test tubes for monkey kidney tissue culture.



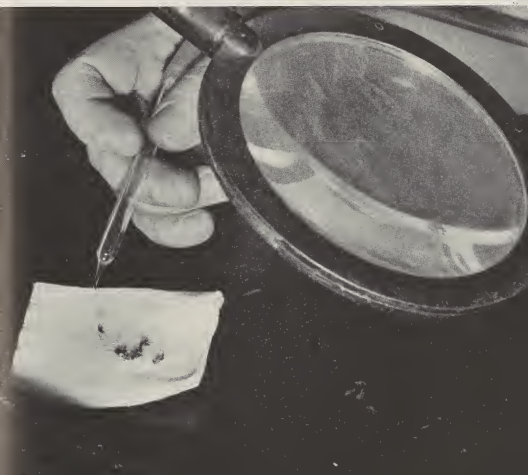


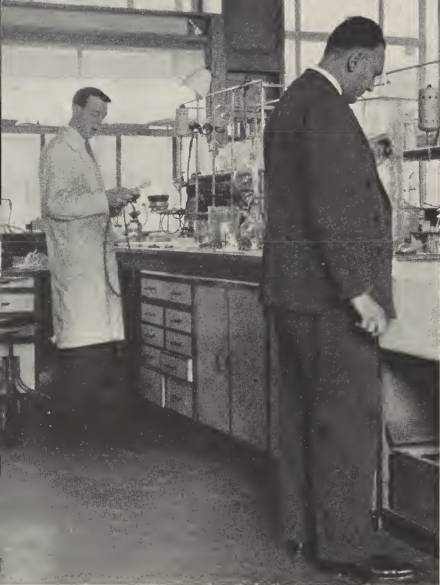
During the last four years the Department of Bacteriology of the University of Malaya has focused its attention on the epidemiology of Japanese B encephalitis in Malaya. While field examinations in the Singapore region will be continued, the department will next undertake an investigation into the short-term fevers of unknown origin that occur so frequently in the tropics.



Hemagglutination tests for arthropod-borne viruses, formerly done in test tubes, are now handled with considerably greater convenience and speed with lucite plates having small, cup-like depressions. The sensitivity of the tests, and the temperature range within which they work, seem to be increased by the new apparatus.

One aspect of the study of arthropod-borne viruses is the laboratory testing of the capacity of various arthropods to transmit a given virus. The insect (here, a mosquito) is inoculated with virus and allowed to bite a laboratory animal. The blood of the animal is then tested for the presence of virus.





With the current grant, Foundation support for the research of Professor Sir Alexander Todd on biologically important molecules totals \$190,250. The Cambridge University organic chemistry department, of which he is the director, has recently moved into new research laboratories built as part of a comprehensive plan for re-housing the entire School of Chemistry in up-to-date quarters.

Among the six member countries of the Central American Corn Improvement Project is Nicaragua, which now has three experiment stations in operation—at Managua, Chinandega, and Jinotega. In this picture, taken at Managua, a local corn variety is shown in comparison with plants grown from improved hybrid seed.





The Mexican Agricultural Program's research center for developing improved corn varieties for the tropics is located at Cotaxtla, Veracruz. The breeding and testing is directed toward finding suitable genetic sources of resistance to lodging, heavy rainfall conditions and attacks by insects, the corn stunt virus, and other diseases, as well as toward increasing yields. The picture shows the experimental seed storage room.

The hacienda "La Rinconada," near Santiago, has been selected by the University of Chile as the site for a new College of Agriculture and an agricultural experiment station. The university's building program is based on a five-year plan providing for the transfer of all teaching and research activities in agriculture to this new rural center.



The potato improvement work of the Colombian Agricultural Program is centered at Tibaitatá, a location that is representative of a large portion of the country's potato-growing areas. Breeding and testing are based on materials and data from the Colección Central Colombiana, containing about 500 clones, both cultivated and wild, from the Andean region, Central America, the United States, Canada, and Europe.

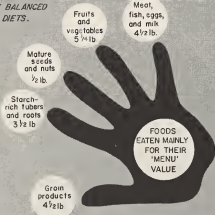




During the past five years striking advances have been made in wheat production in Mexico. New varieties with resistance to stem rust, developed through research, allowed wheat to be planted in new areas, and their higher yields also increased production per unit of land. In this picture, taken during a wheat field day at the La Piedad experiment station in Michoacán, farmers are learning about some of the improved varieties developed by the Mexican Program.

THERE ARE MANY BALANCED
AND SATISFYING DIETS.
HERE IS ONE;
SHOWN AS
A 'FULL'
HAND.

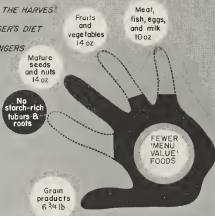
Amounts are
for an adult
for one week



5

BUT EVEN AFTER THE HARVEST
A GENIERI VILLAGER'S DIET
HAS SEVERAL FINGERS
SHORTENED OR
MISSING.

Amounts are
for an adult
for one week



6

Deficiencies in the customary diet of an African village, similar to those in many underdeveloped tropical countries, are graphically shown in this film-strip sequence prepared for teaching purposes. To find local sources of proteins among tropical foodstuffs which villagers can produce or afford to buy, and will be willing to use, is the purpose of research conducted by the Human Nutrition Unit of the Medical Research Council, London.

WHILE IN THE HUNGRY SEASON
FAMINE DRAWS NEAR AND
THE DIET BECOMES
EVEN LESS
BALANCED.

Amounts are
for an adult
for one week



